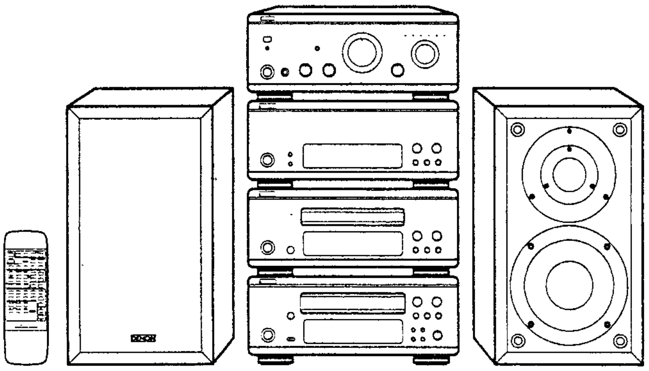
DENON Hi-Fi Personal Component System

Europe, U.K. & Asia Models

SERVICE MANUAL

MODEL D-F88

PERSONAL COMPONENT SYSTEM



Unit No. UPA-F88	**(Pre-Main Amplifier)**
Unit No. UTU-F88	**(AM, FM Stereo Tuner)**
Unit No. UCD-F88	**(Compact Disc Player)**
Unit No. UDR-F88	**(Cassette Tape Deck)**

- The D-F88 Personal Component System consists of the following:

AM, FM Stereo Tuner Unit	UTU-F88
Pre-Main Amplifier Unit	UPA-F88
Compact Disc Player Unit	UCD-F88
Cassette Tape Deck Unit	UDR-F88
Remote Control Unit	RC-830: Europe model, RC-829: Asia model
Speaker Unit	SC-F88 (Option for Asia model)

- Some illustrations using in this service manual are slightly different from the actual set.
- The tuner section of Asia model is not corresponded with RDS (Radio Data System).

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GENERAL SECTION

TABLE OF CONTENTS

General Section
(Page 3 ~ Page 20)

- Specifications 3
- Operating Instructions .... 4 ~ 15
- Packing View .... 16 ~ 20

Tuner Section (UTU-F88)
(Page 21 ~ Page 46)

- Block Diagram 21
- Disassembly Procedures 22, 23
- Adjustments .... 24 ~ 26
- Semiconductors .... 27 ~ 31
- Microprocessor Documentation 32, 33
- Printed Wiring Board, Parts List .... 34 ~ 40
- Microprocessor Peripheral Wiring Diagram 41
- Wiring Diagram 42, 43
- Schematic Diagram 45
- Exploded View, Parts List 46

Pre-Main Amplifier Section (UPA-F88)
(Page 47 ~ Page 66)

- Remote Control Unit (RC-829, RC-830) 47
- Block, Level Diagram 48, 49
- Disassembly Procedures 50, 51
- Adjustments 52
- Semiconductors .... 53 ~ 55
- Microprocessor Documentation 56
- Microprocessor Peripheral Wiring Diagram 57
- Printed Wiring Board, Parts List .... 58 ~ 63
- Wiring Diagram 64
- Schematic Diagram 65
- Exploded View, Parts List 66

Compact Disc Player Section (UCD-F88)
(Page 67 ~Page 85)

- Disassembly Procedures 67
- Laser Pickup 68
- Adjustments 69, 70
- Semiconductors .... 71 ~ 75
- Microprocessor Documentation 76
- Microprocessor Peripheral Wiring Diagram 77
- Printed Wiring Board, Parts List .... 78 ~ 81
- Block Diagram 82
- Schematic Diagram 83
- Exploded View, Parts List 84
- Disassembly of CD Mechanism 85

Cassette Deck Section (UDR-F88)
(Page 86 ~ Page 108)

- Level Diagram 86
- Block Diagram 86
- Disassembly Procedures 87
- Adjustments .... 88 ~ 91
- Semiconductors .... 92 ~ 95
- Microprocessor Documentation 96
- Microprocessor Peripheral Wiring Diagram 97
- Printed Wiring Board, Parts List .... 98 ~ 103
- Wiring Diagram 104
- Schematic Diagram 105, 106
- Cassette Mechanism 107
- Exploded View, Parts List 108

Speaker Section (SC-F88)
(Page 109 ~ Page 111)

- Packing View 109
- Exploded View, Parts List 110
- Schematic Diagram 110
- Network 111
- Wire forming 111

SPECIFICATIONS

■ Pre–main amplifier (UPA–F88)

Rated output power:	45 W + 45 W (4 Ω / ohms, DIN)
Low frequency adjustment range:	100 Hz ±8 dB
High frequency adjustment range:	10 kHz ±8 dB
Audio input / output jacks:	CD input jacks, TAPE input/output jacks, TUNER input jacks, MD input/output jacks, DVD/AUX input jacks, 6.3 mm headphones jack and PHONO input jacks
Power supply:	AC230 V, 50 Hz Europe model, AC115/230 V, 50/60 Hz Asia model
Power consumption:	120W
Maximum external dimensions:	270 (W) × 112 (H) × 330 (D) mm (10–5/8" × 4–13 / 32" × 12–63 / 64") (including feet, controls and terminals)
Weight:	5.3 kg (11 lbs. 11 oz)

■ Tuner (UTU–F88)

Reception frequency band:	FM: 87.50 MHz - 108.00 MHz AM: 522 kHz - 1611 kHz
Reception sensitivity:	FM: 1.5 µV / 75 Ω/ohms AM: 20 µV
FM stereo separation:	35 dB (1 kHz)
Power supply:	AC230 V, 50 Hz Europe model, AC115/230 V, 50/60 Hz Asia model
Power consumption:	10 W
Maximum external dimensions:	270 (W) × 112 (H) × 297 (D) mm (10–5/8" × 4–13 / 32" × 11–45 / 64") (including feet, controls and terminals)
Weight:	2.6 kg (5 lbs. 12 oz)

■ CD player (UCD–F88)

Wow & flutter:	Below measurable limits (±0.001% W. peak)
Sampling frequency:	44.1 kHz
Optical source:	Semiconductor
Power supply:	AC230 V, 50 Hz Europe model, AC115/230 V, 50/60 Hz Asia model
Power consumption:	10 W
Maximum external dimensions:	270 (W) × 112 (H) × 297 (D) mm (10–5/8" × 4–13 / 32" × 11–45 / 64") (including feet, controls and terminals)
Weight:	3.1 kg (6 lbs. 13 oz)

■ Cassette deck (UDR–F88)

Type:	Horizontal 4–track 2–channel stereo auto reverse cassette deck
Heads:	1 hard permalloy recording/playback head 1 double–gap ferrite erasing head
Tape speed:	4.75 cm / s
Included circuits:	Dolby B and C NR, Dolby HX Pro
Usable tapes:	Normal, chrome and metal
Power supply:	AC230 V, 50 Hz Europe model, AC115/230 V, 50/60 Hz Asia model
Power consumption:	14 W
Maximum external dimensions:	270 (W) × 112 (H) × 305 (D) mm (10–5/8" × 4–13 / 32" × 12–1 / 64") (including feet, controls and terminals)
Weight:	3.7 kg (8 lbs. 3 oz)

■ Remote control unit (RC-830): Europe model, (RC-829): Asia model

Remote control system:	Infrared pulse
Number of buttons:	51: Europe model, 47: Asia model
Power supply:	Two DC 1.5V R6P/AA batteries
Maximum external dimensions:	64 (W) × 195 (H) × 18 (D) mm (2–1 / 2" × 7–43 / 64" × 23 / 32")
Weight:	130 g (including batteries) (Approx. 4.6 oz)

* Maximum dimensions include controls, jacks, and covers.
(W) = width, (H) = height, (D) = depth

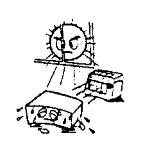
- For improvement purposes, specifications and functions are subject to change without advanced notice.

■ Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation.
HX Pro originated by Bang & Olufsen.

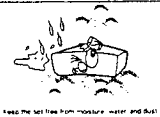
■ "DOLBY", the double–D symbol DD and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

GENERAL SECTION

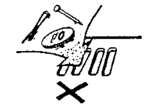
NOTE ON USE / HINWEISE ZUM GEBRAUCH OBSERVATIONS RELATIVES A L'UTILISATION / NOTE SULL'USO



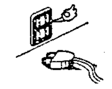
- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack
- Vermeiden Sie hohe Temperaturen
  Beachten Sie, daß eine ausreichend Luftzirkulation gewährleistet wird, wenn das Gerät auf ein Regal gestellt wird
- Éviter des températures élevées
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère
- Evitate di esporre l'unità a temperature alte
  Assicuratevi che ci sia un'adeguata dispersione del calore quando installate l'unità in un mobile per componenti audio



- Keep the set free from moisture, water and dust
- Halten Sie das Gerät von Feuchtigkeit, Wasser und Staub fern
- Protéger l'appareil contre l'humidité, l'eau et la poussière
- Tenete l'unità lontana dall'umidità, dall'acqua e dalla polvere

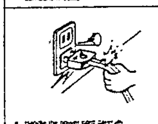


- Do not let foreign objects in the set
- Keine fremden Gegenstände in das Gerät kommen lassen
- Ne pas laisser des objets étrangers dans l'appareil
- E' importante che nessun oggetto è inserito all'interno dell'unità

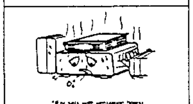


- Unplug the power cord when not using the set for long periods of time
- Wenn das Gerät eine längere Zeit nicht verwendet werden soll, trennen Sie das Netzkabel vom Netzstecker
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes
- Disinnestate il filo di alimentazione quando avete l'intenzione di non usare il filo di alimentazione per un lungo periodo di tempo

- Do not let insecticides, benzene, and thinner come in contact with the set
- Lassen Sie das Gerät nicht mit Insektiziden, Benzin oder Verdünnungsmitteln in Berührung kommen
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil
- Assicuratevi che l'unità non venga in contatto con insetticidi, benzolo o solventi

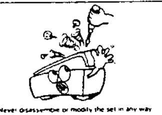


- Handle the power cord carefully
  Hold the plug when unplugging the cord
- Gehen Sie vorsichtig mit dem Netzkabel um
  Halten Sie das Kabel am Stecker, wenn Sie den Stecker herausziehen
- Manipuler le cordon d'alimentation avec précaution
  Tenir la prise lors du débranchement du cordon
- Maneggiate il filo di alimentazione con cura
  Agite per la spina quando scollegate il cavo della presa



For sets with ventilation holes

- Do not obstruct the ventilation holes
- Die Belüftungsöffnungen dürfen nicht verdeckt werden
- Ne pas obstruer les trous d'aération
- Non coprite i fori di ventilazione



- Never disassemble or modify the set in any way
- Versuchen Sie niemals das Gerät auseinander zu nehmen oder auf jegliche Art zu verändern
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre
- Non smontate mai, né modificate l'unità in nessun modo

CAUTION / VORSICHT / ATTENTION / AVVISO

- If the system should smoke or produce strange smells, immediately set the power switch to the STANDBY position, unplug the power cord, and contact your store of purchase
- Sollte das Gerät Rauch produzieren oder eigenartig riechen, stellen Sie den Netzschalter sofort auf die Position STANDBY (Bereitschaft), ziehen Sie den Netzstecker heraus und kontaktieren Sie Ihren Händler
- Si de la fumée sort de la chaîne ou des odeurs bizarres, placer l'interrupteur d'alimentation immédiatement sur la position de veille (STANDBY), débrancher le cordon d'alimentation et contacter le distributeur
- Qualora il sistema dovesse produrre del fumo o degli odori strani, collocate immediatamente l'interruttore di accensione nella posizione STANDBY, disinnestate il filo di alimentazione e rivolgetevi al negozio dell'acquisto

SAFETY IMPORTANT

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

ATTENZIONE: QUESTO APPARECCHIO E' DOTATO DI DISPOSITIVO OTTICO CON RAGGIO LASER
L'USO IMPROPRIO DELL'APPARECCHIO PUO' CAUSARE PERICOLOSE ESPOSIZIONI A RADIAZIONI!

"SERIAL NO. ____________________

PLEASE RECORD UNIT SERIAL NUMBER ATTACHED TO THE REAR OF THE CABINET FOR FUTURE REFERENCE"

- **INSTALLATION PRECAUTIONS**

For heat dispersal, leave at least 10 cm of space between the top, back and sides of this unit and the wall or other components

- **PRECAUTIONS D'INSTALLATION**

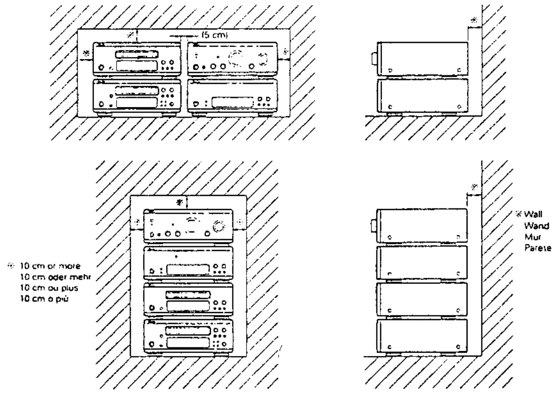
Afin de disperser la chaleur, laisser un espace d'au moins 10 cm entre le haut, l'arrière les côtés de cet appareil et le mur ou un autre composant

- **VORKEHRRUNGEN ZUR INSTALLATION**

Lassen Sie zur Wärmeverteilung mindestens 10 cm Raum zwischen der Oberseite, der Rückseite und den Seiten des Gerätes und der Wand oder anderen Komponenten

- **PRECAUZIONI RIGUARDANTI L'INSTALLAZIONE**

Per consentire una buona dispersione del calore, lasciate uno spazio di almeno 10 cm tra le parti superiore, posteriore e laterali di quest'unità e le parete o gli altri componenti



CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE

VARNING– OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1

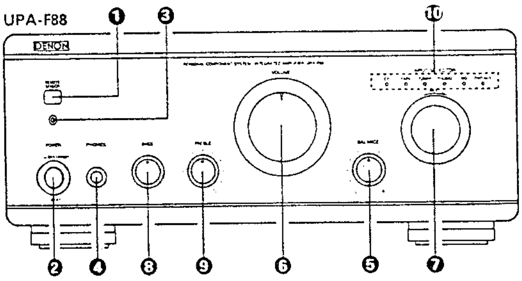
"CLASS 1
LASER PRODUCT"

FRONT PANEL / FRONTPLATTE / PANNEAU AVANT / PANNELLO ANTERIORE

PRE-MAIN AMPLIFIER
VORVERSTÄRKER
AMPLIFICATEUR-PRÉAMPLIFICATEUR
PREAMPLIFICATORE PRINCIPALE

See ENGLISH Page 6
Sehen Sie DEUTSCH Seite 30
Voir FRANÇAIS Page 54
Fate riferimento alla sezione ITALIANO alla pagina 78

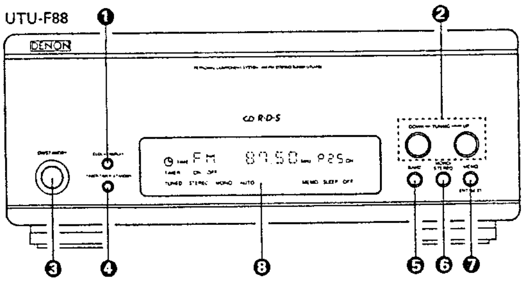
UPA-F88



STEREO TUNER
STEREO EMPFÄNGER
TUNER STÉRÉO
SINTONIZZATORE STEREO

See ENGLISH Page 6
Sehen Sie DEUTSCH Seite 30
Voir FRANÇAIS Page 54
Fate riferimento alla sezione ITALIANO alla pagina 78

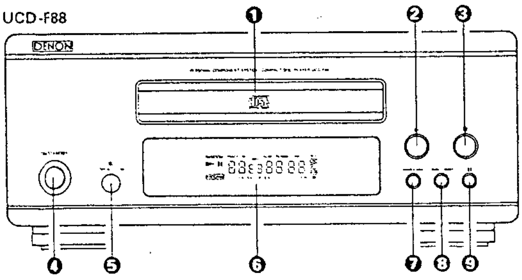
UTU-F88



CD PLAYER
CD-SPIELER
LECTEUR CD
DISPLAY DELLA PIASTRA A CASSETTE

See ENGLISH Page 7
Sehen Sie DEUTSCH Seite 31
Voir FRANÇAIS Page 55
Fate riferimento alla sezione ITALIANO alla pagina 79

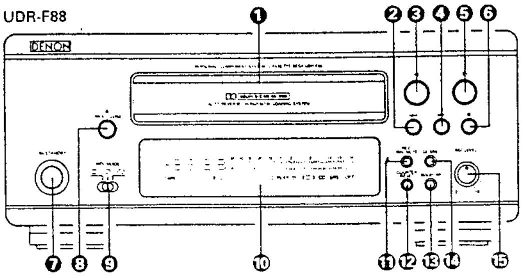
UCD-F88



CASSETTE DECK
CASSETTENDECK
PLATINE CASSETTE
PIASTRA A CASSETTE

See ENGLISH Page 8
Sehen Sie DEUTSCH Seite 32
Voir FRANÇAIS Page 56
Fate riferimento alla sezione ITALIANO alla pagina 80

UDR-F88



- As an aid to better understanding the operation method, the illustrations used in this manual may differ from the actual system
- Als Hilfestellung zum besseren Verständnis der Betriebsmethode erlauben wir uns den Hinweis, daß sich die Abbildungen in dieser Bedienungsanleitung leicht von dem aktuellen System unterscheiden
- Pour faciliter la compréhension de la méthode de fonctionnement, les illustrations utilisées dans ce manuel peuvent être différentes de celles de la chaîne réelle
- Per rendere la spiegazione del metodo operativo più facile, le illustrazioni usate in questo libretto delle istruzioni possono differire dal sistema stesso

CONTENTS

1 Main Features ... 4
2 Before Using ... 4
3 Connecting the Included Antennas ... 4
4 Connections ... 5
5 Part Names, Functions and Displays ... 6 ~ 8
- Pre-Main Amplifier ... 6
- Tuner ... 6
- CD Player ... 7
- Cassette Deck ... 8

6 Remote Control Unit ... 8, 9
7 Listening to Radio Programs ... 10, 11
8 Using the Timer ... 12 ~ 15
9 Before Recording and Playing Tapes ... 16, 17
10 Playing Cassette Tapes ... 18
11 Recording Cassette Tapes ... 19
12 Playing CDs ... 20 ~ 24
- About Compact Discs ... 20
- Normal Playback ... 20, 21
- Various Playback Functions ... 21 ~ 23
- Edited Recording on Sides A and B of a Tape ... 24

13 Auto On Function ... 25
14 Other Information ... 25
15 Specifications ... 25
16 Troubleshooting ... 26
DENON Service Network ... 198, 199

Check that the following parts are included in the package aside from the main unit:

- **UPA–F88 (Pre–main amplifier unit)**
  - Remote control unit (RC–830) ... 1
  - R6P / AA batteries ... 2
  - Operating instructions ... 1
- **UTU–F88 (AM / FM stereo tuner)**
  - FM antenna ... 1
  - AM loop antenna ... 1
  - System connector cable ... 1
  - RCA pin–plug cord ... 1
- **UCD–F88 (compact disc player)**
  - System connector cable ... 1
  - RCA pin–plug cord ... 1
- **UDR–F88 (cassette tape deck)**
  - System connector cable ... 1
  - RCA pin–plug cord ... 2

1 MAIN FEATURES

- **RDS compatible**
  Compatible with various RDS services, including program service name (PS), program type identification (PTY), traffic program identification (TP) and clock time (CT)
- **Quality power for high quality sound**
  45W + 45W (4 Ω / ohms, DIN) high quality amplifier and terminals for large speakers
- **High sound quality, multi–function CD player**
  Edit function for automatically dividing the tracks on a CD for recording onto sides A and B of a tape.
- **Cassette deck with Dolby B, C and HX–Pro circuits**
  For playback and recording of high quality sound
- **Two types of timers**
  Two timer settings can be made — everyday and sleep.
- **Easy–to–use remote control unit**
- **Auto on function**
  The power turns on automatically and playback begins when the play button on the CD player or the cassette deck or the tuner preset up / down buttons on the remote control unit are pressed

2 BEFORE USING

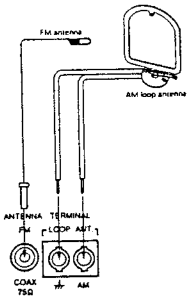
Read the following before using the system.

- **Before turning on the power**
  Check again that all connections are correct and that there are no problems with the connection cords. Be sure to unplug the power cord before connecting or disconnecting the connection cords.
- Humming may be produced if this system is set near a TV or other audio equipment. If this happens, try changing the position of the equipment or the connection cords
- **Moving the system**
  Be sure to remove CDs before moving the system. If a CD is left in the CD player it may be scratched
  To prevent short–circuits or damage to the connection cords, always unplug the power cord and disconnect all connection cords to other audio equipment
- **Condensation (dew)**
  Condensation (water droplets) may be produced on internal optical lenses or discs in the following cases.
  - Directly after a heater is turned on.
  - When the system is in a steamy or humid room.
  - When the system is moved abruptly from a cold place (room) to a warm room.
- **Should condensation occur:**
  The signals on the disc cannot be read and the system will not function properly. Remove the disc then let the system set with the power on. The condensation will evaporate in one hour or less, at which time the system will function normally
- Note that some of the illustrations used for explanations in this manual may differ from the actual system

3 CONNECTING THE INCLUDED ANTENNAS

Installing the FM indoor antenna

Tune in an FM station (see Page 10), set the antenna in a position in which distortion and noise is minimum, then fasten the tip of the antenna in this position using tape or a pin



Connecting an FM outdoor antenna

If good reception cannot be achieved with the included FM antenna, use an FM outdoor antenna. Connect an F–shaped connector to the coaxial cable and connect the antenna to the FM COAX (75 Ω) terminal

Selecting a place for the FM outdoor antenna

- Set the antenna so that it is pointing towards the broadcast station's transmitting antenna. Behind buildings or mountains, set the antenna in the position at which reception is best, and also try changing the direction of the antenna
- Do not install the antenna under power lines
  Doing so is extremely dangerous, as the power line could touch the antenna
- Install the antenna away from roads or train tracks to avoid noise from cars or trains
- Do not install the antenna too high, as it may be hit by lightning.

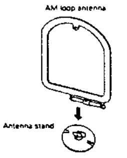
Installing the AM loop antenna

Tune in an AM station (see Page 10) and set the antenna in a position as far from the system as possible in which distortion and noise is minimum. In some cases it is best to invert the polarities. AM broadcasts cannot be received well if the loop antenna is not connected or if it is set close to metal objects

Assembling the AM loop antenna

Assemble the included AM loop antenna as shown in the diagram.

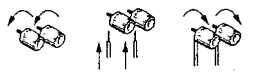
① Remove the clamp
② Insert the AM loop antenna into the antenna stand



Connecting the AM loop antenna

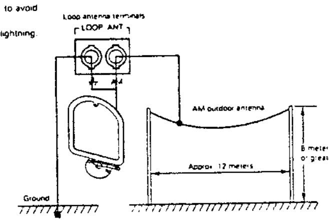
Connect the included AM loop antenna to the antenna terminals as shown in the diagram

① Loosen the terminal knobs
② Insert the antenna wire
③ Tighten the terminal knobs



Installing an AM outdoor antenna

Connect the signal wire from the AM outdoor antenna to the antenna terminal. Be sure to ground the antenna and connect the ground wire to the GND terminal. Also be sure to connect the included AM loop antenna



4 CONNECTIONS

NOTE:

This system includes digital circuitry which may cause interference such as color blotching or changes in the color on TVs. If this happens, move the system and the TV as far apart as possible

Use a record player with an MM cartridge

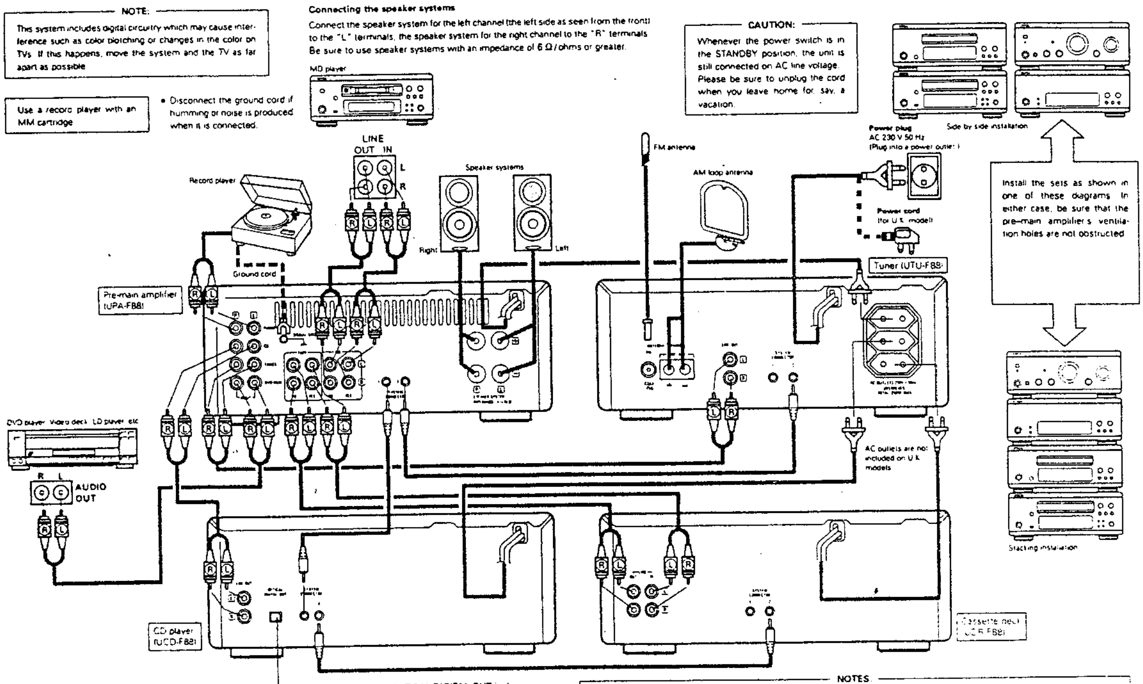
- Disconnect the ground cord if humming or noise is produced when it is connected.

Connecting the speaker systems

Connect the speaker system for the left channel (the left side as seen from the front) to the "L" terminals, the speaker system for the right channel to the "R" terminals. Be sure to use speaker systems with an impedance of 6 Ω / ohms or greater.

CAUTION:

Whenever the power switch is in the STANDBY position, the unit is still connected on AC line voltage. Please be sure to unplug the cord when you leave home for, say, a vacation.



Install the sets as shown in one of these diagrams. In either case, be sure that the pre–main amplifier's ventilation holes are not obstructed

OPTICAL DIGITAL OUT jack

Digital data is output in optical form from this jack

System operations

Such system operations as the timer and the auto on functions, as well as remote control operations cannot be performed unless all the RCA pin–plug cords and system connector cords are connected between the units, so be sure to make all the connections properly as shown in the diagram. Also disconnecting system connectors while the system is operating may result in malfunction. Be sure to turn unplug the power cord before changing connections

NOTES

- Do not plug the power cord into the power outlet until all connections are completed. Be sure to interconnect the channels (L to L (white) and R to R (red)) properly, as shown on the diagram
- Insert the plugs securely. Incomplete connections may result in noise
- Be sure to connect the speaker cords between the speaker terminals and the speaker systems with the same polarities (+ to +, − to −). If the polarities are switched, the sound at the center will be weak, the position of the different instruments will be unclear, and the stereo effect will be lost
- After unplugging the power cord, wait about 5 seconds before plugging it back in
- Note that setting the connection cords (pin–plug cords) next to the power cords may result in humming or other noise

GENERAL SECTION

5 PART NAMES, FUNCTIONS AND DISPLAYS

PRE–MAIN AMPLIFIER

❶ **REMOTE SENSOR**
When operating the remote control unit, point it at this sensor.

❷ **POWER switch**
Use this button to turn the power of the entire system on and off (standby).
When pressed and set to the "ON" position, the power turns on. Press again to set to the "OFF" position. (The other units are set to the power standby mode.)

NOTE:
When the POWER button is set to the "OFF" position, it is not possible to use the remote control unit or the timer.
To use the remote control unit and timer, press the POWER button on the remote control unit (RC–830) when the D–F88's POWER button is already set to the "ON/STANDBY" position and set the D–F88 to the standby mode.

The tuner's power may not turn on if the POWER button is set to the "ON" position directly after the power cord is plugged into the power outlet.
Wait until the tuner's time display turns on before pressing the POWER button.

❸ **Power indicator**
This turns on when the POWER button is set to the "ON/STANDBY" position.
The indicator flashes immediately after the POWER button is pressed and the power is turned on.

❹ **PHONES (headphones jack)**
Plug the headphones into this jack.
No sound is produced from the speakers when headphones are plugged in.

❺ **BALANCE control**
Use this to adjust the balance of the volume between the left and right channels. When set at the center position, the volume is the same for the left and right channels.

❻ **VOLUME control**
Use this to adjust the overall volume.
The volume increases when the control is turned clockwise (↻) and decreases when it is turned counterclockwise (↺).

❼ **INPUT SELECTOR (function) knob**
The function switches in the following order each time the control is turned clockwise (↻).
CD → TAPE → TUNER → PHONO → MD → DVD/AUX
(The control cannot be turned counterclockwise.)

❽ **BASS control**
Use this to adjust the volume of the low frequencies.

❾ **TREBLE control**
Use this to adjust the volume of the high frequencies.

❿ **Function indicators**
These light to indicate the currently selected function.

TUNER

❶ **CLOCK / DISPLAY selector button**
This button is used to switch the display between the reception frequency and the clock.

❷ **TUNING UP and DOWN buttons**
These buttons are used to select AM and FM stations and to set the clock and timer.

❸ **Power operation switch (ON / STANDBY)**
Press this button once to turn the tuner's power on, then press again to set the tuner to the standby mode. In the standby mode, "OFF" appears on the display.

❹ **TIMER / TIMER STANDBY button**
Press this when setting the timer and to turn the timer on so that it operates at the set times.
When the button is pressed after the timer has been set, the timer standby mark (" ◔ ") appears on the display. Press again to turn the mark off.
The timer will not operate when the " ◔ " mark is off.

❺ **BAND (AM / FM) selector button**
The band switches between AM and FM each time this button is pressed.

❻ **MONO / STEREO selector button**

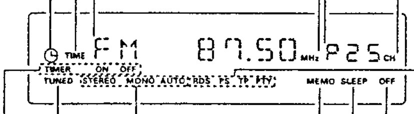
AUTO mode:
Use this mode to receive programs in stereo.
The sound and the indicators on the display automatically switch between monaural ("MONO") and stereo ("STEREO") according to whether the program is being broadcast in monaural or stereo.

MONO mode:
Use this mode to receive programs in monaural regardless of whether they are being broadcast in monaural or stereo.
Set this mode if there is much noise or if the signals are weak when receiving stereo programs (when "AUTO" is lit).

❼ **MEMO ENT / NEXT button**
This button is used to preset AM and FM stations and when setting the timer.

❽ **Display**

TUNER DISPLAY



The timer will operate when this is lit.

This lights when the display is set to the clock mode.

The reception band, reception frequency, time and timer settings are displayed here.
Displays the timer and RDS data.

This indicates the number of the preset channel.

This lights when a station is tuned in properly.

These light when setting the timer.
"TIMER" lights when the timer is set.

This flashes for approximately 10 seconds when the MEMO button is pressed while presetting stations.

This lights when the sleep timer is operating.

This lights when in the standby mode.

These display the reception mode

STEREO:	This lights when a stereo program is received in the AUTO mode.
MONO :	This lights when a monaural program is received in the AUTO mode and when the MONO/STEREO button is pressed, setting the monaural mode.
AUTO	This lights when the MONO/STEREO button is pressed, setting the auto mode.

- RDS (Radio Data System)
  When the RDS button is pressed, a station is searched for and automatically tuned in, the "RDS" indicator lights and the station's name is displayed on the frequency display.
- PTY (Program Type)
  This indicator lights when the type of RDS program is specified.
- TP (Traffic Program)
  "TP" lights when an RDS traffic information station is received.
- PS (Program Service name)
  This lights when the station name is displayed.

NOTE:
- The timer standby mark (" ◔ ") does not light if the current time and the timer have not been set.

CD PLAYER

❶ **Disc tray**
Load discs here.

❷ **▶ (play) button**
Press this button to start playing the disc.
Even when the disc tray is open, the disc tray closes and playback begins when this button is pressed.
When pressed in the standby mode, the power automatically turns on and playback begins. (Auto on function)

❸ **■ (stop) button**
Press this button to stop playback.

❹ **Power operation switch (ON / STANDBY)**
Press this once to turn the CD player's power on, then press again to set the CD player to the standby mode. In the standby mode, "OFF" appears on the display.

❺ **⏏ OPEN / CLOSE button**
Press this to open and close the disc tray.
When pressed once, the disc tray opens out, and when pressed again, the disc tray closes. If a disc is loaded, the total number of tracks and total playing time of the disc are displayed several seconds after the disc tray is closed.
When pressed in the standby mode, the CD player's power turns on.

❻ **Display**

❼ **⏮ / ◀◀**
(automatic / manual search reverse) button
Use this to move to the beginning of a specific track.
When pressed during playback or in the pause mode, the pickup moves backward a number of tracks equal to the number of times the button is pressed.

❽ **▶▶ / ⏭**
(automatic / manual search forward) button
Use this to move to the beginning of a specific track.
When pressed during playback or in the pause mode, the pickup moves forward a number of tracks equal to the number of times the button is pressed.
- The automatic search mode is set if the ❼ or ❽ button is released within 0.5 seconds, and the manual search mode is set if the button is held for over 0.5 seconds.

❾ **II (pause) button**
Press this button to stop playback temporarily.
Press the play button to cancel the pause mode and resume playback.

CD PLAYER DISPLAY

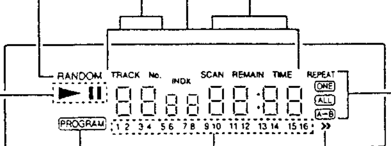
The following is displayed on the track number display:
- When the disc's data cannot be read properly 00
- In the stop mode .... Total number of tracks
- In the play and program modes .... Track number

The following is displayed on the time display
- When the disc's data cannot be read .... dISC
- In the stop mode .... Total playing time
- In the play and pause modes .... Elapsed time for current track
- In the program mode .... Elapsed time of programmed tracks
- When the outermost section of the disc is reached during the manual search operation .... End

Track number display

Time display

This lights when the RANDOM button is pressed.



▶ (the play indicator) lights when a disc is playing, and II (the pause indicator) lights when the pause mode is set.

"PROGRAM" lights during programmed playback.

This lights if there are more than 16 tracks on the disc.

Music calendar
The numbers of the tracks on the disc are displayed here (up to track number 16). The number for the corresponding track turns off after that track is played.
During programmed playback, the numbers of the programmed tracks are displayed (up to track number 16).
All the numbers light if the disc's data cannot be read properly.

This changes as follows each time the REPEAT button is pressed.

1st press	REPEAT ONE (single-track repeat) is displayed and the number of the track to be repeated on the music calendar lights.
2nd press	REPEAT ALL (all-track repeat) is displayed.
3rd press	REPEAT A– is displayed.
4th press	REPEAT A–B is displayed.
5th press	Nothing is displayed.

(Only REPEAT ONE and REPEAT ALL are displayed in the stop mode.)

CASSETTE DECK

❶ **Cassette tray**
The cassette tray opens out when the OPEN / CLOSE button is pressed. Load the cassette tape with the side on which the tape is exposed facing away from you. To close the cassette tray, press the OPEN / CLOSE button again. For details, refer to Page 16.

❷ **◀◀ (rewind) button**
Press this button to rewind the top side of the tape. (The bottom side of the tape is fast-forwarded.) Also use this button to search for the beginning of the current selection when playing in the forward (▶) direction, or to search for the beginning of the following selection when playing in the reverse (◀) direction.

❸ **◀ (reverse play) button**
Press this button to play the bottom side of the tape. If this button is pressed in the standby mode, the power of the cassette deck and pre–main amplifier automatically turns on and playback begins. (AUTO ON function)

❹ **▶▶ (fast–forward) button**
Press this button to fast–forward the top side of the tape. (The bottom side of the tape is rewound.) Also use this button to search for the beginning of the following selection when playing in the forward (▶) direction, or to search for the beginning of the current selection when playing in the reverse (◀) direction.

❺ **▶ (forward play) button**
Press this button to play the top side of the tape. If this button is pressed in the standby mode, the power of the cassette deck and pre–main amplifier automatically turns on and playback begins. (AUTO ON function)

❻ **■ (stop) button**
Press this button while the tape is moving to stop the tape.

❼ **Power operation switch (ON / STANDBY)**
Press this once to turn the cassette deck's power on, then press again to set the cassette deck to the standby mode. In the standby mode, "OFF" appears on the display.

❽ **≜ OPEN / CLOSE button**
Press this to open and close the cassette tray.
When pressed in the standby mode, the cassette deck's power turns on.

❾ **REV. MODE selector switch**
Use this to select the direction of tape travel.
For details refer to Page 17.

❿ **Display**

⓫ **REC / REC MUTE button**
This button is used when recording and when creating blank spaces between selections. If only the REC / REC MUTE button is pressed, the recording pause mode is set.
Press the button again while in the recording pause mode to set the recording mute mode for approximately 5 seconds, after which the mode returns to the recording pause mode. If the ▶ or ◀ is pressed in the recording pause mode, recording starts on the side of the tape corresponding to that button.
The recording pause mode is set when this button is pressed for less than 0.5 seconds while in the recording mode. If it is pressed for over 0.5 seconds while in the recording mode, the recording mute mode is set for approximately 5 seconds, after which the recording pause mode is once again set. Press the ■ (stop) button to cancel the recording pause mode.

NOTE:
- If the play button on the CD player is pressed during the recording pause mode, recording of the CD begins automatically.

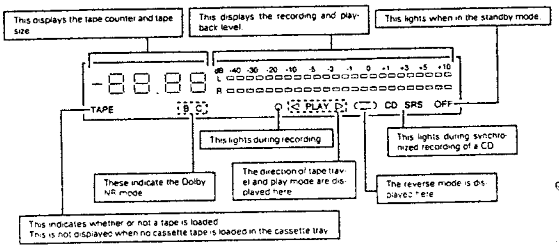
⓬ **COUNTER RESET button**
Press this button to reset the tape counter to "00 00".

⓭ **DOLBY NR mode selector button**
Use this to select the Dolby NR mode (OFF, B or C). When playing a tape, set the Dolby NR mode to the same mode as when the tape was recorded.
OFF → B → C

⓮ **CD SRS**
(Synchronized Recording System) button
Use this button for synchronized recording of CDs.
For details, refer to Page 19.

⓯ **REC LEVEL control**
Use this to set the recording level.
For details, refer to Page 19.

CASSETTE DECK DISPLAY



This displays the tape counter and tape size.

This displays the recording and playback level.

This lights when in the standby mode.

This lights during recording.

This lights during synchronized recording of a CD.

These indicate the Dolby NR mode.

The direction of tape travel and play mode are displayed here.

The reverse mode is displayed here.

This indicates whether or not a tape is loaded.
This is not displayed when no cassette tape is loaded in the cassette tray.

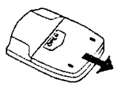
6 REMOTE CONTROL UNIT

The D–F88 comes with a system remote control unit (RC–830).

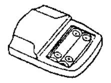
Inserting the batteries

NOTES:
- Use R6P (AA) batteries in this remote control unit.
- Replace the batteries with new ones approximately once each year, though this depends on how frequently the remote control unit is used.
- Replace the batteries with new ones earlier if the remote control unit does not operate even from a short distance.
- Insert the batteries in the proper + and − direction, following the marks in the battery compartment.
- Remove the batteries when not using the remote control unit for extended periods of time.
- To avoid damage and leakage
  - Do not use a new battery with an old one.
  - Do not use two different types of batteries.
  - Do not short-circuit, take apart, heat or dispose of batteries in flames.
- If the batteries should leak, carefully wipe the fluid out of the battery compartment, then insert new batteries.

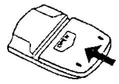
① Open the battery compartment cover on the back of the remote control unit.
Press the knob and open the cover in the direction of the arrow.



② Insert the two R6P (AA) batteries, following the + and − marks in the battery compartment.

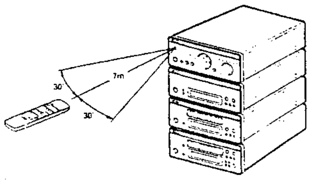


③ Close the cover of the battery compartment.



Using the Remote Control Unit

Cautions on Use
- The remote control unit may not operate if the remote sensor is exposed to direct sunlight or the strong light from a lighting fixture, or if there is an obstacle between the remote control unit and the remote sensor.
- Do not press buttons on the remote control unit and on the set at the same time. Doing so could result in malfunction.
- If the remote control unit is pointed away from the remote sensor during continuous operations (such as when turning the volume up or down), the operation will stop. If this happens, point the remote control unit at the remote sensor and press the button again.
- The remote control unit will only function when the pre–main amplifier's power is set to the on / standby mode. It will not function when the pre–main amplifier's power is turned off.



- The remote sensor is located on the pre–main amplifier. Point the remote control unit at the remote sensor as shown on the diagram when operating it.
The remote control unit will operate from a direct distance of approximately 7 meters, but this distance will be shortened if obstacles are present or if operated at an angle.
(The remote control unit will operate at an angle of up to 30° in either direction.)

Remote Control Unit Part Names and Functions

MD operation buttons

▶ (play) button
Press this button to start playback.

■ (stop) button
Press this button to stop playback.

|◀◀ and ▶▶| (automatic search buttons)
Use these buttons to search for the beginning of the desired track.

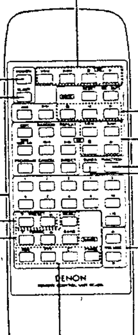
POWER operation switch
Use this switch to turn on the power of the entire system or set the power to the standby mode.

SLEEP button
Press this button to set the sleep timer.

Number buttons
Press these buttons after pressing the TUNER button to recall preset stations.
When playing a CD, press these buttons after pressing the DIRECT or PROGRAM button to specify the desired track.

PRESET buttons
Use these buttons to recall preset stations on the tuner.

BAND (AM / FM) selector button
TUNING buttons
MEMO button



Cassette deck operation buttons

■ (stop) button
Press this button to stop the tape.

▶ (forward play) button
Press this to start playback or recording in the forward direction.

◀ (reverse play) button
Press this to start playback or recording in the reverse direction.

CD operation buttons

■ (stop) button
Press this button to stop playback.

▶ (play) button
Press this button to start playback.

|◀◀ and ▶▶|
(automatic search buttons)
Use these buttons to search for the beginning of the desired track.

FUNCTION selector button
Press this button to switch the input (function).
The input changes in the following order each time this button is pressed: CD, TAPE, TUNER, PHONO, MD, DVD / AUX.

TUNER button
Press this button to switch the function to the tuner and to recall preset stations from the remote control unit using the number buttons.

VOLUME buttons
Use these to adjust the volume.
The volume increases when the ▲ button is pressed and decreases when the ▼ button is pressed.

RDS button
Use this button to automatically tune to stations using the radio data system.
RDS → PTY → TP

PTY button
Press this button after selecting "PTY" with the RDS button to select one of the 15 program types.

CT button
Use this to correct the time of the clock on the UTU-F88. Press this button when the time service of an RDS station is being properly received.
"CT" and "TIME" are displayed for 2 seconds and the UTU-F88's clock is corrected. "NO CT" is displayed if the RDS station does not offer a time service and when the broadcast is not being received properly.

PANEL button
Press this button when receiving RDS stations to select the frequency, PS or PTY display.
Note that this button will not function if the reception is poor.

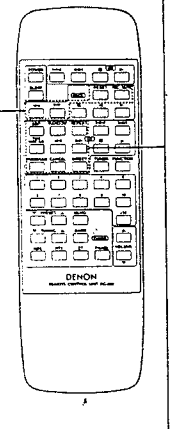
Cassette deck operation buttons

● REC / REC MUTE button
To start recording from the stop mode, press this button, then press ▶.
When this button is pressed during the recording, a blank section of approximately 5 seconds is created, after which the recording standby mode is set.

◀◀ (rewind) button
Press this button to rewind the tape.
Press this button during playback to set the music search mode (to find the beginning of selections).

▶▶ (fast–forward) button
Press this button to fast-forward the tape.
Press this button during playback to set the music search mode (to find the beginning of selections).

RESET button
Press this button to reset the tape counter to "00 00".



CD player operation buttons

DIRECT button
Press this button for direct search on the CD player.

◀◀ and ▶▶
(manual search) buttons
Press these buttons during playback to move quickly forward or backward.

REPEAT button
Press this button for repeat playback.

RANDOM button
Press this button to play the tracks in random order.

PROGRAM button
Press this button for programmed playback on the CD player.

CANCEL button
Press this button to clear the last track from the program.

EDIT button
Press this button for edited recording on a tape, dividing the tracks onto sides A and B according to the length of the tape.

TIME / SIDE A / B button
- TIME
  Press this button during the play or pause mode to switch the time display.
  Normally the elapsed time for the track currently playing is displayed. When this button is pressed, the display switches to the remaining time for that track, the total remaining time on the disc, then back to the elapsed time per track.
  During programmed playback, the total remaining time display indicates the total remaining time of the programmed tracks.
- SIDE A / B
  Press this button during the editing operation to switch the display between sides A and B of the tape.
- The TIME / SIDE A / B button functions as the SIDE A / B button when it is pressed after the EDIT button is pressed and the tracks have been divided between sides A and B and before the play or pause button is pressed (before the recording mode is set).
  The TIME / SIDE A / B button functions as the TIME button when it is pressed during the play, pause, or edited recording modes.

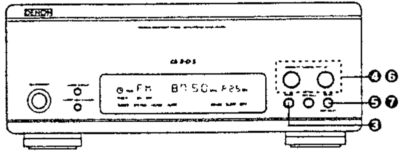
GENERAL SECTION

7 LISTENING TO RADIO PROGRAMS

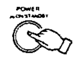
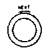
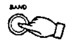
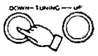
(Check the connections on Pages 4 and 5.)

TUNING

Tuner (UTU-F88)



Example: Tuning in FM 87.50 MHz
(AM stations are tuned in using the same procedure.)

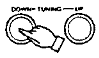
1	Set the VOLUME control on the pre-main amplifier to the minimum position, then press the POWER switch to turn on the power		
2	Turn the pre-main amplifier's INPUT SELECTOR control and select "TUNER"		
3	Press the BAND button on the tuner to select the FM band.		FM 90.00
4	Use the TUNING UP and DOWN buttons to tune the frequency to 87.50. Once the frequency is tuned in, adjust the volume to the desired level using the VOLUME control		This lights when a station is tuned in FM 87.50

Auto Tuning

- When one of the TUNING buttons is pressed, the frequency changes in steps of 50kHz in the FM band, 9kHz in the AM band.
- If one of the TUNING buttons is held in for over 1 second, the frequency continues to change when the button is released (auto tuning) and stops when a station is tuned in. Tuning will not stop at stations whose reception is poor
- To stop the auto tuning function, press the UP or DOWN button once.

Presetting AM and FM Stations

Example: Presetting FM 87.50 (currently tuned in) at preset number 3

5	Press the MEMO ENT/NEXT button. The MEMO indicator flashes for 10 seconds		Flashes FM 87.50 P Flashes
6	Use the UP and DOWN buttons to call out the number at which you want to preset the station (3), or simply press the corresponding number button ③ on the remote control unit		"P" flashes FM 87.50 P 3 Flashes
7	Press the MEMO ENT/NEXT button while the MEMO indicator is flashing		"P3" lights FM 87.50 P 3
Up to 30 AM or FM stations can be preset using this procedure			

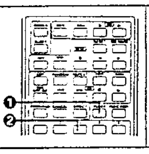
NOTES:

- In addition to the reception frequency, the reception mode (monaural or auto) is also preset, so check the display when presetting stations
- If a station is preset at a number where a station is already preset, the previous station is replaced with the new station
- The preset memory is not cleared immediately when the power cord is unplugged, but is cleared if the cord is left unplugged for an extended period of time. If this happens, preset the stations again

Listening to Preset Stations

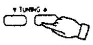
The preset stations can be recalled using the number buttons on the remote control unit.
Also, if the following operation is performed when the system power is off, the power automatically turns on and the radio is played (Auto on function)

Example: Listening to the station preset at number 3
(This operation is only possible from the remote control unit.)

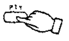
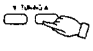
1	Press the TUNER button on the remote control unit.		FM 87.50 P 3
2	Press button "3" on the remote control unit		

Using the RDS functions

Receiving RDS broadcasts (FM only)

1	Press the BAND button and set the FM band.		FM 87.50
2	Press the RDS button once		← RDS → Flashes "RDS" blinks
3	Press the AUTO TUNING UP (▲) or DOWN (▼) button.		FM 87.50 Flashes "RDS" displayed
4	The station is tuned in		"RDS" lights after 5 seconds of flashing Once the station is tuned in, "RDS" flashes for 5 seconds and the program service name is displayed
NOTE: If no RDS station is found " NO PROG " is displayed			

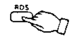
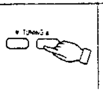
PTY Search

1	Press the RDS button twice		← PTY → Flashes ("PTY" and "RDS" flash, and "←PTY→" displayed.)
2	Press the PTY button to select the type of program (One of the 15 types listed below can be selected.)		NEWS Flashes
3	Press the AUTO TUNING UP (▲) or DOWN (▼) button		FM 87.50 Flashes
4	The station is tuned in		PTY and "RDS" light after 5 seconds of flashing Once the station is tuned in, "RDS" and "PTY" flash for 5 seconds and the program service name is displayed
NOTE: If no program of the specified type is found " NO PROG " is displayed			

Programs

NEWS	(News)
AFFAIRS	(Current Affairs)
INFO	(Information)
SPORT	(Sport)
EDUCATE	(Education)
DRAMA	(Drama)
CULTURE	(Culture)
SCIENCE	(Science)
VARIED	(Varied)
POP M	(Pop Music)
ROCK M	(Rock Music)
MOR M	(M.O.R. Music)
LIGHT M	(Light Classics)
CLASSICS	(Serious Classics)
OTHER M	(Other Music)

TP Search

1	Press the RDS button 3 times		← TP → Flashes
2	Press the (▲) UP or DOWN (▼) button of AUTO TUNING		FM 87.50 Flashes
3	Broadcast reception		"TP" and "RDS" lights Once the station is tuned in, "TP" and "RDS" light and the program service name is displayed
NOTE: " NO PROG " is displayed when there is no traffic information broadcast station			

Receiving FM programs in stereo

- Press the MONO/STEREO selector button to turn on the "AUTO" indicator. When a program being broadcast in stereo is received, the "STEREO" indicator lights and the program is received in stereo
- If reception is poor and there is much noise in the stereo signals, press the MONO/STEREO selector button to set the monaural mode

NOTE:

- A humming sound may be heard when using a TV nearby while receiving AM programs. If this happens, move the system as far from the TV as possible

8 USING THE TIMER

The time and timer functions are incorporated in the tuner

Timer Settings

■ Types of timer operations

TIMER	Use this to turn the power on and off at the same times every day
SLEEP TIMER	Use this to set the power to turn off after 10 to 60 minutes, in steps of 10 minutes (operated from the remote control unit).

■ Notes on timer settings

- Be sure to set the current time beforehand
- To listen to or record a radio program ("air check") using the timer, be sure to preset the station beforehand (Refer to "Presetting AM and FM Stations" on Page 10.)

Power Failures

Should there be a power failure or should the power cord be unplugged, the time display will flash at "00:00". If this happens, reset the current time

Also check the timer and tuner presettings, and reset them if they have been cleared

Checking the Settings

To check the timer settings, press the TIMER/TIMER STANDBY button for at least 3 seconds (This can also be done when the tuner's power is off.) Next, press the ENTER/NEXT button repeatedly to display the timer start mode, the reception band and preset channel number when in the tuner mode, the on time and the off time Press the ENTER/NEXT button once more to return to the current mode display.

Changing the Settings

Repeat the timer setting operation to erase the previous settings and set the new settings

Clearing the Settings

Press the TIMER/TIMER STANDBY button for at least 3 seconds, then press it for at least 3 seconds again while "FUNC" is displayed to clear the timer settings

Note on Setting the Timer

If the time set with the timer is reached while the system power is on, the operation switches to the operation set by the timer

Turning the Timer Off

Press the TIMER/TIMER STANDBY button to turn the 🕒 mark off

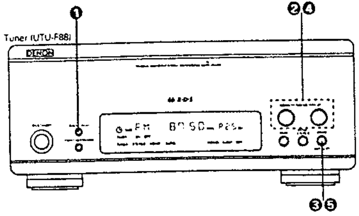
NOTE:

- When the timer start time is reached while the power is on, the operation switches to the mode set with the timer

Setting the Current Time

The time is displayed in the 24-hour mode.

Tuner (UTU-F88)



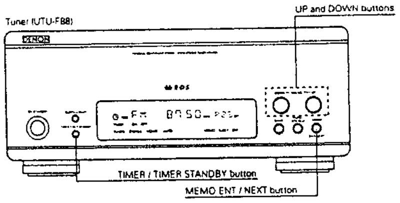
Example: Setting to 19:30 (7:30 p.m.)

1	Press the CLOCK/DISPLAY button for at least 3 seconds	CLOCK/DISPLAY	:00 The hours place flashes (If the hours have already been set, that number flashes.)
2	Use the UP and DOWN buttons to set the hours	DOWN—TUNING—UP	19:00 The hours place flashes
3	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	19:00 The minutes place flashes (If the minutes have already been set, that number flashes.)
4	Use the UP and DOWN buttons to set the minutes	DOWN—TUNING—UP	19:30 The minutes place flashes
5	Press the MEMO ENT/NEXT button at the sound of a time service's chime The time display stops flashing and the clock starts running	MEMO ENT/NEXT	19:30 The display stops flashing and the clock starts running from 00 seconds

- The current time can be set even when the power is off
- If an RDS station offers a time service, the time can be set by pressing the CT button on the remote control unit while that station is tuned in

Setting the Timer

The power can be set to turn on and off every day at the same time in any of five modes tuner, CD, cassette deck MD player (optional) and air check (recording from the radio) (Preset the AM or FM station beforehand.)



Example: Setting the tuner to turn on at 12:35, off at 12:56 (with FM 87.50 MHz preset at channel "3")

1	Press the POWER switch on the pre-main amplifier to turn on the system's power	POWER ON/STANDBY	FM 90.00 P 1 Say that FM 90.00 MHz is tuned in at preset channel number "1"
2	Press the TIMER/TIMER STANDBY button for at least 3 seconds to set the timer setting mode	TIMER/TIMER STANDBY	FUNC
3	Use the UP and DOWN buttons to set the "TUNER" mode	DOWN—TUNING—UP	TUNER
4	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	Flashes 87.50 P 3
5	Use the UP and DOWN buttons to set the preset channel number	DOWN—TUNING—UP	
6	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	0:00 Flashes (If the timer has already been set, that number flashes.)
7	Use the UP and DOWN buttons to set the hours for the timer on time	DOWN—TUNING—UP	12:00 Flashes
8	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	12:00 Flashes (If the timer has already been set, that number flashes.)
9	Use the UP and DOWN buttons to set the minutes for the timer on time.	DOWN—TUNING—UP	12:35 Flashes
10	Press the MEMO ENT/NEXT button.	MEMO ENT/NEXT	0:00 Flashes
11	Use the UP and DOWN buttons to set the hours for the timer off time.	DOWN—TUNING—UP	12:00 Flashes
12	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	12:00 Flashes (If the timer has already been set, that number flashes.)
13	Use the UP and DOWN buttons to set the minutes for the timer off time	DOWN—TUNING—UP	12:56 Flashes (If the timer has already been set, that number flashes.)
14	Press the MEMO ENT/NEXT button	MEMO ENT/NEXT	FM 90.00 P 1 The display returns to as it was before the timer setting mode was set
15	Press the TIMER/TIMER STANDBY button	TIMER/TIMER STANDBY	Lights 🕒 FM 90.00 P 1
16	Press the POWER operation switch on the remote control unit (RC-830) and set the system's power to the standby mode	POWER	🕒 10:15

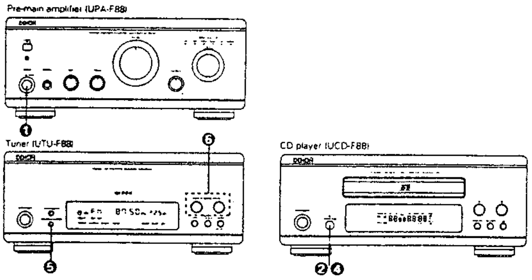
If the 🕒 mark is displayed after the TIMER/TIMER STANDBY button is pressed, the timer will operate at the same times every day. To turn the timer off, press the TIMER/TIMER STANDBY button again to turn the 🕒 mark off

NOTES

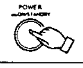
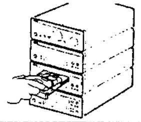
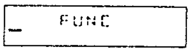
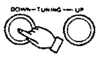
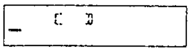
- The standby mark (🕒) will not light if the current time is not set. If this is the case, set the current time, then press the TIMER/TIMER STANDBY button
- The timer will not function when the pre-main amplifier's power is turned off

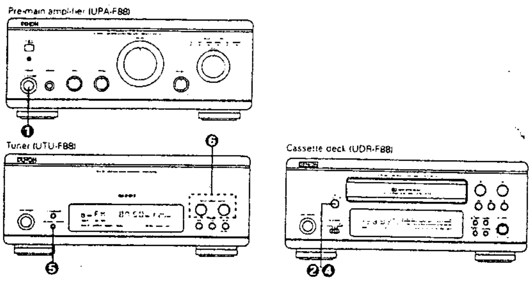
GENERAL SECTION

Various Timer Operations

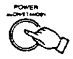
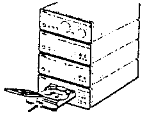
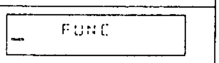
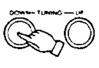
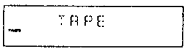

Pre-main amplifier (UPA-F88)
❶
Tuner (UTU-F88)
❻
❺
CD player (UCD-F88)
❷❹

Example 1: Playing a compact disc with the timer

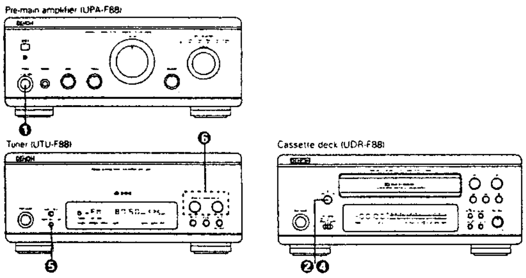
1	Press the POWER switch on the pre-main amplifier to turn on the system's power.		
2	Press the CD player's ≜ OPEN/CLOSE button to open the disc tray.		
3	Load the disc in the disc tray. Refer to Page 20.		
4	Press the CD player's ≜ OPEN/CLOSE button again to close the disc tray		
5	Press the tuner's TIMER/TIMER STANDBY button for at least 3 seconds	TIMER/TIMER STANDBY	
6	Use the tuner's UP and DOWN buttons to set the "CD" mode	 DOWN—TUNING—UP	
7	Now follow steps 6 to 16 under "Setting the Timer" on Page 13		


Pre-main amplifier (UPA-F88)
❶
Tuner (UTU-F88)
❻
❺
Cassette deck (UDR-F88)
❷❹

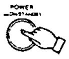
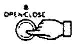
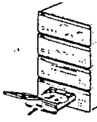
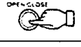
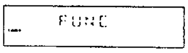
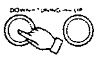
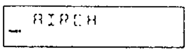
Example 2: Playing a cassette tape with the timer

1	Press the POWER switch on the pre-main amplifier to turn on the system's power.		
2	Press the cassette deck's ≜ OPEN/CLOSE button to open the cassette tray		
3	Load the cassette tape in the cassette tray. Refer to Page 16.		
4	Press the cassette deck's ≜ OPEN/CLOSE button again to close the cassette tray.		
5	Press the tuner's TIMER/TIMER STANDBY button for at least 3 seconds	TIMER/TIMER STANDBY	
6	Use the tuner's UP and DOWN buttons to set the "TAPE" mode	 DOWN—TUNING—UP	
7	Now follow steps 6 to 16 under "Setting the Timer" on Page 13		

- Check that the direction of tape travel, reverse mode and Dolby NR mode are set as desired


Pre-main amplifier (UPA-F88)
❶
Tuner (UTU-F88)
❻
❺
Cassette deck (UDR-F88)
❷❹

Example 3: Unattended recording of radio programs ("air check")

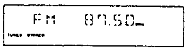
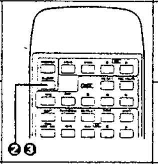
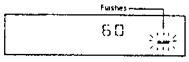
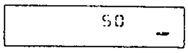
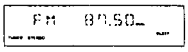
1	Press the POWER switch on the pre-main amplifier to turn on the system's power		
2	Press the cassette deck's ≜ OPEN/CLOSE button to open the cassette tray		
3	Load the cassette tape in the cassette tray Refer to Page 16		
4	Press the cassette deck's ≜ OPEN/CLOSE button again to close the cassette tray		• For instructions on setting the reverse mode and Dolby NR mode, refer to 2 and 3 on Page 19
5	Press the tuner's TIMER/TIMER STANDBY button for at least 3 seconds	TIMER/TIMER STANDBY	
6	Use the tuner's UP and DOWN buttons to set the "AIRCH" mode	 DOWN—TUNING—UP	
7	Now follow steps 6 to 16 under "Setting the Timer" on Page 13		

- Check that the direction of tape travel and reverse mode are set as desired
- Timer recording starts in the direction indicated on the display
- Recording is not possible on the leader tape at the beginning of the cassette tape, so to avoid missing any of the program, we recommend setting the timer to approximately 1 minute before the program is scheduled to start

Setting the Sleep Timer

With this function, the power can be set to turn off after 10 to 60 minutes, in steps of 10 minutes, using the remote control unit

Example: Setting the power to turn off in 50 minutes
(This operation is only possible from the remote control unit.)

1	Tuner currently set to FM 87.50 MHz		
2	Press the SLEEP button		
3	Press the SLEEP button again while the "SLEEP" indicator is flashing		
4	The previous display reappears after 5 seconds The "SLEEP" indicator remains lit, indicating that the sleep timer is functioning		

- The time is reset to "60" (60 minutes) if the SLEEP button is pressed again while the sleep timer is functioning

Cancelling the Sleep Timer

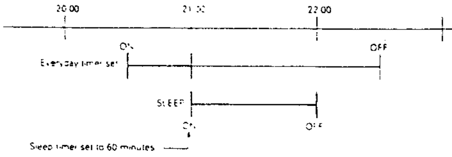
Press the SLEEP button repeatedly until the "SLEEP" indicator turns off
The sleep timer is also cancelled if the amplifier's POWER switch or the POWER operation switch on the remote control unit is pressed, turning the system power off

NOTE

- If the times set with the sleep and everyday timers overlap, the sleep timer has priority

Order of priority of the sleep and everyday timers

The sleep timer has priority for the off time. (The system operates as indicated by the bold lines.)



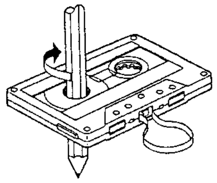
Even when the power was turned on with the timer, the power turns off when the remaining time of the sleep timer reaches "00" before the off time set with the everyday timer is reached. If the everyday timer's on time is reached while the sleep timer is functioning, the everyday timer does not function

9 BEFORE RECORDING AND PLAYING TAPES

About Cassette Tapes

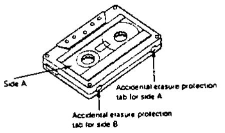
■ Cautions on handling cassette tapes

- C-120 cassette tapes
  C-120 (120-minute) cassettes use very thin tape which can easily get caught on the capstans and pinch rollers. We recommend not using C-120 tapes.
- Tape slack
  If the tape is slack, it may get caught in the mechanism and damaged. Take up any slack in the tape with a pencil, etc., before loading the cassette.



■ Preventing accidental erasure

- Cassette tapes have tabs for preventing accidental erasure. Use a screwdriver, etc., to break off the tabs to prevent recordings from being accidentally erased.
- To record on a tape whose tabs have been broken, place a piece of cellophane tape, etc., over the tab holes.


Side A
Accidental erasure protection tab for side A
Accidental erasure protection tab for side B

■ Notes on storing cassette tapes

- Avoid placing cassette tapes in the following types of places
  - Hot or humid places
  - Dusty places
  - Places exposed to direct sunlight
  - Near magnetic sources (TVs, speakers, etc.)
- Store cassette tapes in cases with stoppers to prevent the tape from getting slack.

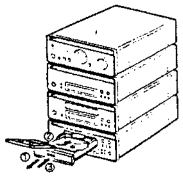
Loading and Unloading Cassette Tape

NOTE:

- Load cassette tapes with the side on which the tape is exposed facing the set. Loading them the other way may result in damage.

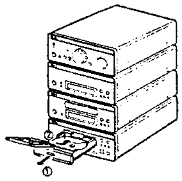
■ Loading

① Press the OPEN/CLOSE button. The cassette tray opens.
② Load the cassette tape in the cassette tray as shown on the diagram below, with the side on which the tape is exposed facing inside.
③ Press the OPEN/CLOSE button to close the cassette tray.



■ Unloading

① Press the OPEN/CLOSE button. The cassette tray opens.
② Remove the tape.



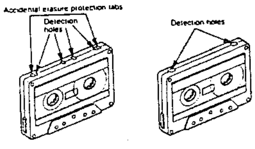
Check the following before recording or playing cassette tapes:

1. Are the heads dirty?	The sound quality will be poor if the heads are dirty. Refer to Page 25
2. Are the accidental erasure protection tabs broken off?	Recording is not possible if the accidental erasure protection tabs on the top of the cassette are broken off. Refer to Page 16

Auto Tape Selector Mechanism

The D-F88 is equipped with an auto tape selector mechanism which uses the detection holes in the cassette halves to detect the type of tape and automatically set the most appropriate recording bias and equalization for that type of tape.

- Do not use ferrichrome tapes.
- When an old metal tape with no detection holes is used, the treble will be stressed excessively, so use metal tapes with detection holes.



Metal tape   Chrome tape

Using the Auto Reverse Function

This deck is equipped with an auto reverse function, so the tape can be played or recorded on both sides or played continuously without removing the cassette.

■ Direction of tape travel

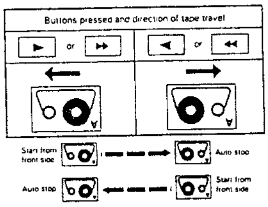
This deck is equipped with two play buttons, one for the forward direction (front side) and one for the reverse direction (back side). If the button for the opposite direction is pressed during playback, playback switches to the other side.

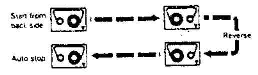
The front side is the side facing up when the tape is loaded in the cassette tray.

■ Reverse mode

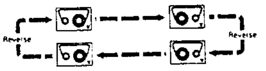
There are three reverse modes, as described below. For instructions on switching between them, refer to Page 17, 18.

- **Single-sided recording / playback mode (═)**
  Use this to record or play only the front or back side.
  (The stop mode is set automatically when the end of that side of the tape is reached.)
- **Double-sided recording / playback mode (═⊃)**
  - In this mode, when the end of the front side of the tape is reached during recording or playback, the tape automatically switches to the back side and playback or recording continues.
    (The stop mode is set automatically when the end of the tape on the back side is reached.)
- **Continuous play mode (⊂═⊃)**
  In this mode, playback continues until the stop button is pressed.





- When started from the back side, only the back side is recorded or played.

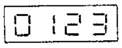


- During recording, the deck automatically operates in the same way as for the double-sided recording/playback mode (═⊃).

Using the Tape Counter

■ Tape counter

The D-F88's tape counter indicates the tape's elapsed time as the continuous number.

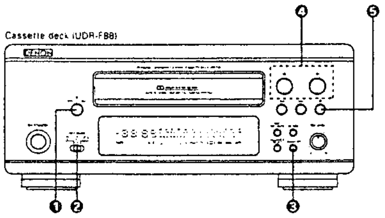


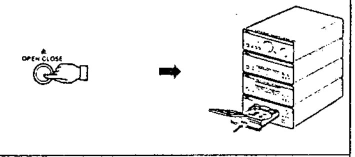
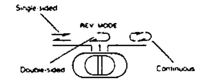
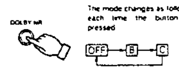
- The counter is reset to "0000" when a new tape is loaded and when the RESET button is pressed.
- If you make notes on the number on the counter and the recorded content while recording or playing tapes, these notes can be used to easily find the section you want to play or record.

GENERAL SECTION

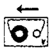
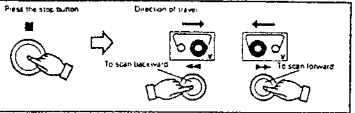
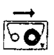
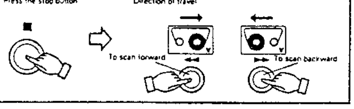
10 PLAYING CASSETTE TAPES (single-sided, double-sided and continuous playback)

Cassette deck (UDR-F88)



The R mark indicates operations which can also be performed on the remote control unit		
1	Press the ≜ ONCE/CLOSE button and load a recorded tape in the cassette tray. Refer to Page 16	
2	Slide the REV MODE selector switch Refer to Page 17.	
3	Press the DOLBY NR button display the Dolby mode. Refer to Page 8	 The mode changes as follows each time the button is pressed When playing tapes recorded with Dolby NR, set the Dolby mode to the same mode (B or C) as when the tape was recorded
4	Press the play button (▶ or ◀) R	Playback begins in the direction of that button
5	To stop playback, press the stop button (■) R	

Fast-forwarding and rewinding

1	When listening to the front side. (when ▶ is lit) R		Press the stop button Direction of travel 
2	When listening to the back side. (when ◀ is lit) R		Press the stop button Direction of travel 

Using the Music Search Function (automatically finding the beginning of selections)

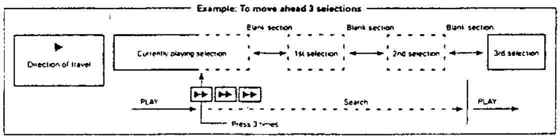
■ Use this function to move back to the beginning of the current selection or forward to the beginning of the following selection

■ This function can also be used to skip over selections (up to 99 selections in either direction)

1	When listening to the front side (when ▶ is lit) R	To move to the beginning of the current selection Press once. To move back five selections Press six times		To move to the beginning of the following selection Press once To move ahead five selections Press five times
2	When listening to the back side (when ◀ is lit) R	To listen to the following track Press once To listen to the track five tracks forward Press five times		To return to the beginning of the current track Press once To return to the track five tracks before Press six times

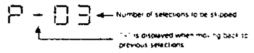
- To fast-forward or rewind the tape, first press the stop ■ button, then press the ▶▶ or ◀◀ button
- The music search function will only work if there are blank sections of at least 4 seconds between selections.

Example: To move ahead 3 selections

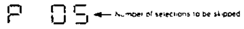


Music Search Display

- When a selection before the current selection is specified


P - 03
Number of selections to be skipped
"-" is displayed when moving back to previous selections

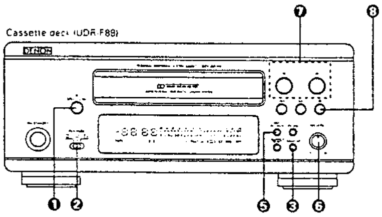
- When a selection after the current selection is specified



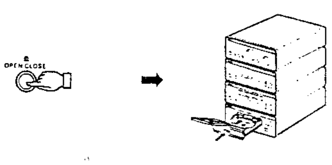
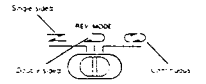
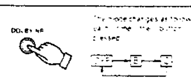
During the music search function, the number of selections to be skipped is displayed on the tape counter, and decreases each time a blank section is detected. (For example, P03 → P02 → P01 → P00 when moving 3 selections ahead.)
The tape counter reappears when the operation is completed

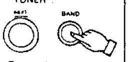
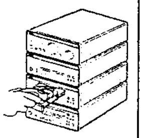
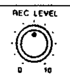
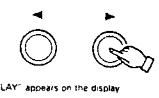
11 RECORDING CASSETTE TAPES

Cassette deck (UDR-F88)



- Before recording on a cassette tape, check that its accidental erasure protection tabs are intact
  Recording is not possible if the tabs are broken off
- The positions of the VOLUME, TREBLE and BASS controls on the pre-main amplifier do not affect the recording

The R mark indicates operations which can also be performed on the remote control unit		
1	Press the ≜ OPEN/CLOSE button and load the tape onto which you want to record in the cassette tray Refer to Page 16	
2	Slide the REV MODE selector switch to the ⇄ or ⊂⊃) Refer to Page 17	
3	Press the DOLBY NR button display the Dolby mode Refer to Page 8	 The mode changes as follows each time the button is pressed [illegible] Dolby NR set to B or C

	To record the radio	To record from the component connected to the AUX terminals	To record a CD
4	Turn the pre-main amplifier's INPUT SELECTOR control and select "TUNER".  Tune in the station to be recorded Refer to Page 10 R	Turn the pre-main amplifier's INPUT SELECTOR control and select "DVD/AUX" Starting playback on the DVD player, video deck or LD player R	Load the disc in the CD player. Refer to Page 20 Press the CD player's play button to start playback 
5	Press the REC/REC MUTE button.	REC/ REC MUTE	The recording pause mode is set and the recording indicator (●) appears on the display.
6	Adjust the recording level.		The recording level of the source being played is displayed on the level meter Use the REC LEVEL control to adjust the recording level (Refer to "Adjusting the REC LEVEL Control" below.)
7	Press the play button (▶ or ◀) (Recording starts.)  "PLAY" appears on the display R	7	• For synchronized recording of CDs Press the stop buttons on the CD player and cassette deck, then press the CD SRS button "CD SRS" appears on the display (Recording starts.) * When the CD SRS button is pressed, a blank section of 9 seconds is automatically created before recording starts * CD SRS recording starts in the direction of travel indicated on the display (◀ or ▶), so press the ◀ or ▶ button to switch to the desired direction after loading the tape, then press the stop ■ button to set the desired direction for CD SRS recording
8	To stop recording, press the stop button (■) R		

- If the CD player's play button is pressed in the recording pause mode, recording of the CD begins automatically
- The CD SRS function will not work if the CD player is set to the random play or program mode

Adjusting the REC LEVEL Control

The recorded sound will be distorted if the recording level is too high, or there will be much noise if the recording level is too low. It is important to set the recording level to an appropriate setting to achieve a good quality recording
- Watch how far the level meter lights and adjust the REC LEVEL control accordingly

Optimum recording input level (approximate)

Type-I (normal) tapes	Meter lights up to 0dB
Type-II (CrO₂) tapes	Meter lights up to +1dB
Type-IV (metal) tapes	Meter lights up to +1dB

NOTES

- The actual recording level differs depending on the source and the type of tape, so make a trial recording first to check the recording level
- Record with the recommended recording level, then lower the input level if there is distortion in the recorded sound

12 PLAYING CDs

About Compact Discs

Only discs with the mark shown left can be played on the D-F88

Use compact discs that include the mark

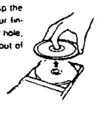
CD's with special shapes (heart-shaped CD's, octagonal CD's etc.) cannot be played on this set.
Attempting to do so may damage the set. Do not use such CD's

Disc	Remarks
CD	
CDV	Only the audio part is played
CD singles (8cm discs)	

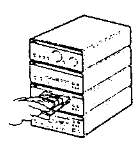
- For CDVs, only the audio part is played. (The video part is not played.)

■Removing discs from their cases

As shown on the diagram, grasp the outer edge of the disc with your fingers, insert a finger in the center hole, press gently, then lift the disc out of the case



■Loading discs in the disc tray

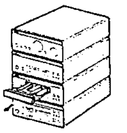


Be sure to load the disc with the labelled side facing up. (Compact discs only play on one side.) For 8cm CDs, set the disc in the sunken section in the center of the tray.

NOTES:
- The disc tray opens when the OPEN/CLOSE button is pressed once and closes when it is pressed again
- When the disc tray is closed, the disc turns automatically for several seconds, then the total number of tracks and total playing time of that disc appear on the display
- The disc tray can also be closed by pressing the play button (▶), in which case playback automatically starts from the first track on the disc (or if tracks are programmed, from the first programmed track)

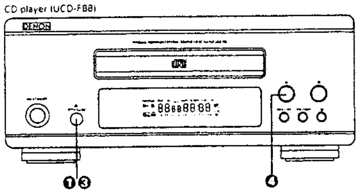
Handling the Disc Tray

Do not turn off the power, stop the disc tray by hand or pull on it when it is moving. Doing so may damage it.
If the headphones' cord or some other object accidentally gets caught in the disc tray while it is closing and the disc tray stops, press the OPEN/CLOSE button again to open the tray and remove the obstacle.
Do not set objects other than discs on the disc tray. Doing so may damage it.



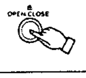
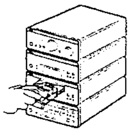
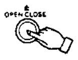
Normal Playback

CD player (UCD-F88)

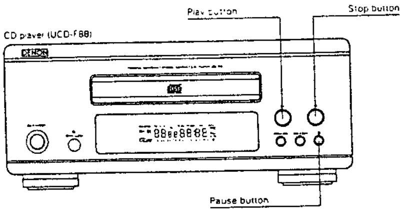


Example: Playing a disc containing 15 tracks and with a playing time of 62 minutes, 03 seconds, starting from the first track

The R mark indicates operations which can also be performed on the remote control unit.

1	Press the ≜OPEN/CLOSE button to open the disc tray.		OPEN
2	Load the CD in the disc tray.		
3	Press the ≜OPEN/CLOSE button The disc tray closes. The display appears after several seconds		15 62:03
4	Press the play button (▶) R		▶ 0 1 0 1 00:01

CD player (UCD-F88)



Interrupting playback temporarily

Press the pause button (⏸).		The "⏸" mark appears on the display and playback stops at the point where the button was pressed

Resuming playback

Press the play button (▶) R		The "⏸" mark turns off on the display, and playback resumes from the point where the pause button was pressed

Stopping playback

Press the stop button (■) R		15 62:03

NOTES
- When a disc is loaded, "LEAd IN" is displayed on the display for several seconds while the data on the number of tracks and total playing time is being read from the innermost side of the disc, after which the number of tracks and total playing time appear
- If no disc is loaded, if the disc is upside down, or if the data cannot be read properly due to scratches or dirt, the display reads as shown below and the disc will not play

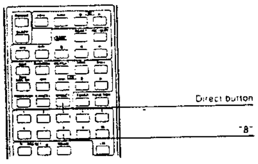
dISC

Various Playback Functions

In addition the regular playback, the D-F88 also offers the following playback functions.

❶ Playing a specific track .... **Direct Search**

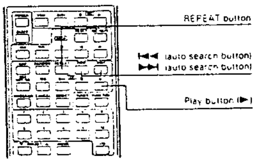
(Using the remote control unit)
Example: Playing the 8th track



① Press the DIRECT button
② Press the button corresponding to the number of the track 8. "8" appears on the track number display and playback of track number 8 begins.
- When the end of the track is reached, playback continues on the next track
- To specify a track number of 11 or greater, say track 15, press [+10] then [5], and to specify a track number of 20 or greater, say track 23, press [+10], [+10] then [3].
  To play track 20, press [+10] then [10].

❷ Playing a single track repeatedly .... **Single-track Repeat**

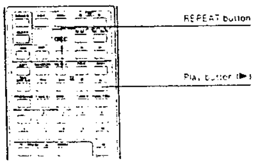
(Using the remote control unit)



① When the REPEAT button is pressed once, REPEAT ONE appears on the display and the single-track repeat mode is set
② Use the ⏮ and ⏭ buttons to select the track to be repeated
③ Press the play button (▶) to start playback
- When the end of the specified track is reached, playback starts over from the beginning of that track
- The single-track repeat mode can also be set by pressing the REPEAT button once during playback
- To cancel the single-track repeat mode, press the REPEAT button repeatedly until the "REPEAT" indicator turns off

❸ Playing all the tracks repeatedly .... **All-track Repeat**

(Using the remote control unit)

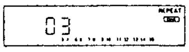
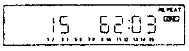
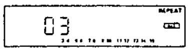
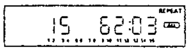
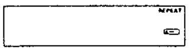
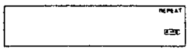


① When the REPEAT button is pressed twice, REPEAT ALL appears on the display and the all-track repeat mode is set
② Press the play button (▶) to start playback
- The all-track repeat mode can also be set by pressing the REPEAT button twice during playback
- To cancel the all-track repeat mode, press the REPEAT button to turn the "REPEAT" indicator off
- If the REPEAT button is pressed during programmed playback, the tracks are played repeatedly in the programmed order

GENERAL SECTION

❹ Playing a certain section repeatedly .... A–B Repeat

Example: Using a CD containing 15 tracks

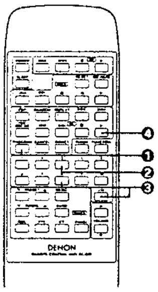
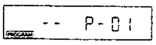
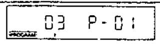
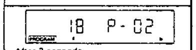
1st press	(1) When pressed during playback 	The single–track repeat mode is set and "REPEAT" and "ONE" light
	(2) When pressed before playback 	The single–track repeat mode is set and "REPEAT" and "ONE" light. Next. ① Press the play button (▶) to play the first track repeatedly ② If playback is started using the direct search buttons on the remote control unit or the ▶▶/▶▶| and |◀◀/◀◀ buttons on the CD player, the specified track is played repeatedly.
2nd press	(1) When pressed during playback 	The all–track repeat mode is set and "REPEAT" and "ALL" light.
	(2) When pressed before playback 	The all–track repeat mode is set and "REPEAT" and "ALL" light. Then press the play button (▶) or direct search buttons on the remote control unit to play
3rd press	When pressed during playback 	"REPEAT" and "A –" light
4th press	When pressed during playback 	"REPEAT" and "A – B" light, and the section between points A and B is played repeatedly.
Press the REPEAT button again to return to normal playback.		

❺ Playing the tracks in a certain order .... Programmed Playback

(Using the remote control unit)

Example: Programming the 3rd track to play first, the 18th track to play second, using a CD containing 18 tracks and with a playing time of 62 minutes, 03 seconds

Procedure

1	Press the PROGRAM button		
2	Press "3" to set the 3rd track at the first place in the program.		 After 2 seconds - - P - 02 display when the 3rd track is set at the first place
3	Press "+10" and "8" to set the 18th track at the second place in the program		 After 2 seconds - - P - 03 display when the 18th track is set at the second place
4	Press the play button (▶)		The tracks are played in the programmed order

- When the TIME button is pressed before playback, the total playback time of programmed tracks is displayed.
- Press the DIRECT button to resume normal playback during the programmed playback
- To cancel the entire program, press the DIRECT button or cancel the program one by one using the CANCEL button
- If you want to correct the programmed track, press the automatic/manual search reverse button (|◀◀/◀◀) to display the track to correct and press the desired number button on the remote control unit. Press the CANCEL button instead of the number button to cancel the displayed track. After finishing the correction, press the automatic/manual forward button (▶▶/▶▶|) repeatedly until "- -" is displayed on the track number display

Other operations possible during programmed playback:

Such operations as quick search, pause and skip monitor are also possible during programmed playback

For the quick search function, press the automatic/manual search reverse button (|◀◀/◀◀) to move back to the beginning of the track, then press it again while the time display reads "00:00" to move back to the beginning of the preceding track.

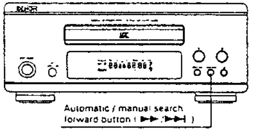
To move ahead to the beginning of the next track, press the automatic/manual search forward button (▶▶/▶▶|), regardless of the time display

NOTES:

- The numbers of the programmed tracks on the music calendar turn off after the tracks have been played.
- With this CD player, up to 20 tracks with any track number between 1 and 99 can be programmed
- If a number greater than the total number of tracks on the disc is specified, that number will not be displayed.
- Programming is also possible with the disc tray open. In this case it is possible to program a track number not included on the disc, but when the program is played, that track number will be skipped.
- The entire program is cancelled when the OPEN/CLOSE button is pressed
- If you make a mistake when programming, press the CANCEL button to cancel the mistake. (The last track in the program is cancelled each time the CANCEL button is pressed.)
- The A–B repeat functions do not work during programmed playback
- Set the stop mode when cancelling tracks from the program.

❻ Moving ahead to the next track during playback .... Quick Search

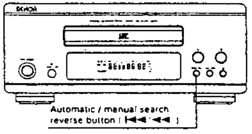
CD player (UCD-F88)



Press the automatic/manual search forward button (▶▶/▶▶|)

❼ Moving back to the beginning of the track during playback .... Quick Search

CD player (UCD-F88)



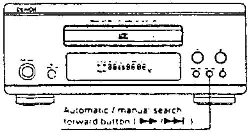
Press the automatic/manual search reverse button (|◀◀/◀◀)

❽ Finding a certain spot on the disc while listening to the sound .... Skip Monitor

- Use this function to skip through the disc while listening to the sound
- When the desired spot is reached using the skip monitor function, release the automatic/manual search forward button (▶▶/▶▶|) or automatic/manual search reverse button (|◀◀/◀◀) to resume normal playback from that point

(1) Forward skip monitor

CD player (UCD-F88)

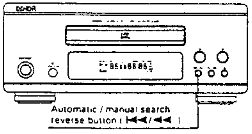


During playback, press and hold in the automatic/manual search forward button (▶▶/▶▶|) to skip through the disc in the forward direction while listening to the sound

- The track currently being monitored and the elapsed time for that track are indicated on the display
- If the end of the last track on the disc is reached while pressing the automatic/manual search forward button (▶▶/▶▶|), "End" appears on the display and the manual search operation stops.
  To continue playback, press and hold in the automatic/manual search reverse button (|◀◀/◀◀) until a track number appears on the display, then perform the desired operation

(2) Reverse skip monitor

CD player (UCD-F88)



- The track currently being monitored and the elapsed time for that track are indicated on the display
- If the automatic/manual search reverse button (|◀◀/◀◀) is pressed continuously, it will reach the beginning of the first track on the disc.
  Release the automatic/manual search reverse button (|◀◀/◀◀) to resume normal playback.

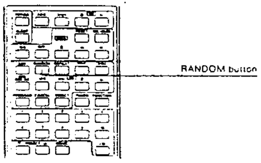
During playback, press and hold in the automatic/manual search reverse button (|◀◀/◀◀) to skip through the disc in the reverse direction while listening to the sound

If the automatic/manual search forward or automatic/manual search reverse button is pressed during programmed playback then released at a track not in the program, instantly the next track in the program is searched and played.

❾ Playing the tracks in random order .... Random Playback

(Using the remote control unit)

- Use this function to play all the tracks on the disc once in random order



- Press the RANDOM button to turn on the "RANDOM" indicator, then press the play button to start random playback in the programmed playback mode
- In the normal playback mode, simply press the RANDOM button to start random playback
- The programmed tracks can be played in random order by pressing the RANDOM button when tracks are programmed
- If the RANDOM button is pressed while the repeat mode is set, the tracks are each played once in random order, then played again in another order, and so on
- Random playback cannot be set in the A–B repeat mode
- While the next track is being searched for, any numbers of the tracks on the disc are not displayed on the track number display so it is not possible to know which track will be played next
- The repeat mode is set to the all–track repeat mode when the RANDOM button is pressed during the single–track repeat mode

NOTES

- The total remaining time cannot be displayed during the random playback mode
- The random playback mode cannot be set during editing

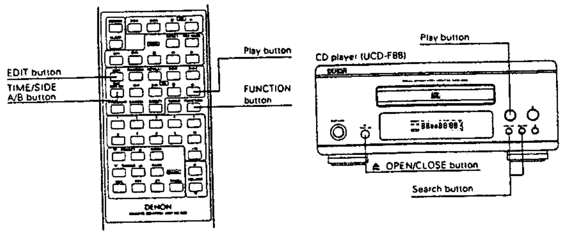
Edited Recording on Sides A and B of a Tape

This function allows edited recording according to the size of the tape (This operation is only possible from the remote control unit.)

- Use this function to efficiently edit the tracks on a CD according to the length (time) of the tape onto which you want to record

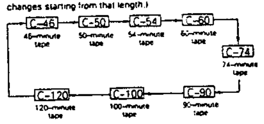
NOTES:

- In the edited recording mode, it is programmed so that the remaining time of the tape becomes minimum and the last programmed track may be out of line on both side. If you want to make serial track recording in this case, use the CD SRS button after stopping the edited recording mode. Refer to Page 19.
- Load the cassette tape onto which you want to record in the cassette deck with side A on the top before starting the editing procedure. The tape is automatically wound to the beginning before recording starts.
- The editing mode is cancelled when the CD player's stop button is pressed
- Note that even if the tape is slightly longer than the disc's total playing time, it may not be possible to record all the tracks on sides A and B because of the combination of tracks to be recorded on the different sides of the tape.
- When recording on an already recorded tape, if the tape is longer than the new recording, the previous recording will remain at the end of side B, so erase the tape before starting.
- To protect the recording, to not turn the INPUT SELECTOR (function) knob during edited recording.
- During edited recording, only the stop button, POWER operation switch, and TIME button for the CD player and the RESET button, stop button, DOLBY NR button, and POWER operation switch for the cassette deck will function.
- Blank sections of 4 seconds are automatically created between all the selections to make it easier to search for selections on tapes recorded on this system. Since this differs from the actual time between tracks on the CD, the displayed time and the actual remaining time on the tape differ slightly
- During edited recording, if the deck's reverse mode is set to ⊏, it automatically switches to the ⊏⊃ mode and side B is recorded.
- The total remaining time cannot be displayed during the programmed edited recording.



❶ Recording the tracks in the same order as on the disc .... **Automatic Edited Recording**

Example: Recording a disc containing 16 tracks and a total playing time of 56 minutes on a C-60 cassette tape

1	Press the CD player's ▲ OPEN/CLOSE button to open the disc tray. Load the disc in the disc tray.		OPEN
2	Press the ▲ OPEN/CLOSE button to close the disc tray. The display appears after several seconds		16 56:00
3	Press the FUNCTION button on the remote control unit or the pre-main amplifier to set the CD mode		
4	Press the EDIT button on the remote control unit to set the length of the tape (The length is the total for sides A and B.) For a 60-minute (C-60) tape, press the EDIT button 4 times		Load the cassette tape onto which you want to record in the cassette deck with side A facing up.
	The display changes as shown below each time the EDIT button is pressed (If the tape length has already been set once, the display changes starting from that length.) 		Example: For a 60-minute tape Ed C 60 2 minutes 40 seconds remaining on side A Ed 02 40 Side A display – Tracks 1 to 9 will be recorded on side A
5	Press the TIME/SIDE A/B button on the remote control unit. The display switches between sides A and B each time the button is pressed		1 minute, 20 seconds remaining on side B Ed 01 20. Side B display
6	Press the play button on the remote control unit or the CD player.		Track no. Elapsed time ▶ 01 Ed 01 21
7	The tape is automatically wound to the beginning on the cassette deck, then recording starts.		

C-46
46-minute tape
C-50
50-minute tape
C-54
54-minute tape
C-60
60-minute tape
C-74
74-minute tape
C-90
90-minute tape
C-100
100-minute tape
C-120
120-minute tape

❷ Recording the tracks in a specific order .... **Programmed Edited Recording**

① Program the desired tracks as described in "Programmed Playback" on Page 22.
② Follow steps 4 to 6 for automatic edited recording

13 AUTO ON FUNCTION

- When the play button or OPEN/CLOSE button on the CD player or cassette deck is pressed while the power is set to the standby mode, the power automatically turns on and the play or open/close operation is performed
- In the same way, when the tuner preset up/down buttons on the remote control unit is pressed, the power turns on and the corresponding station is tuned in

14 OTHER INFORMATION

Cleaning the Heads

- If the cassette deck's heads are dirty, tapes cannot be played or recorded with good sound quality
- To take full advantage of all the performance this cassette deck has to offer and ensure good quality sound, clean the heads periodically after approximately 10 hours of use, using a commercially available cleaning cassette

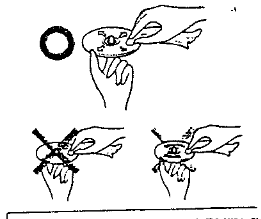
NOTE

Some commercially available cleaning cassettes are highly abrasive and may damage the heads. Avoid using such cleaning cassettes

Demagnetizing the Heads

- The heads become magnetized after they have been used for an extended period of time or if they are exposed to a magnetic object. This results in noise or a loss of the treble sound
- If the heads are magnetized, use a commercially available cassette-type head demagnetizer to demagnetize them

Cleaning Discs



Dust, fingerprints or spit on the disc will result in noise or skipping. If the disc is dirty or if the CD player does not operate properly, use the following procedure to clean the disc

- Hold the disc with the signal surface (the side opposite the labelled side) facing up, as shown in the diagram
- Wipe the disc gently from the center towards the edge (in the direction of the arrow) with a soft cloth

Do not clean discs with the following

- Benzene, alcohol or other solvents
- Cleaner including an abrasive
- Sprays or cleaners designed for records
- Anti-static

NOTES

- Do not wipe discs in the direction opposite the arrow or in a circular motion as with regular records
- The disc's signal surface is easily damaged, so do not wipe it with a hard cloth or rub it strongly

15 SPECIFICATIONS

■ Pre-main amplifier (UPA-F88)	
Rated output power:	45 W + 45 W (4 Ω/ohms, DIN)
Low frequency adjustment range:	100 Hz ±8 dB
High frequency adjustment range:	10 kHz ±8 dB
Audio input / output jacks:	CD input jacks, TAPE input/output jacks, TUNER input jacks, MD input/output jacks, DVD/AUX input jacks, 6.3 mm headphones jack and PHONO input jacks
Power supply:	AC 230 V, 50 Hz
Power consumption:	120W
Maximum external dimensions:	270 (W) × 112 (H) × 330 (D) mm (10-5/8" × 4-13/32" × 12-63/64") (including feet, controls and terminals)
Weight:	5.3 kg (11 lbs 4 oz)
■ Tuner (UTU-F88)	
Reception frequency band:	FM 87.50 MHz – 108.00 MHz AM 522 kHz – 1611 kHz
Reception sensitivity:	FM 1.5 μV / 75 Ω/ohms AM 20 μV
FM stereo separation:	35 dB (1 kHz)
Power supply:	AC 230 V, 50 Hz
Power consumption:	10 W
Maximum external dimensions:	270 (W) × 112 (H) × 297 (D) mm (10-5/8" × 4-13/32" × 11-45/64") (including feet, controls and terminals)
Weight:	2.6 kg (5 lbs. 15 oz)
■ CD player (UCD-F88)	
Wow & flutter:	Below measurable limits (±0.001% W. peak)
Sampling frequency:	44.1 kHz
Optical source:	Semiconductor
Power supply:	AC 230 V, 50 Hz
Power consumption:	10 W
Maximum external dimensions:	270 (W) × 112 (H) × 297 (D) mm (10-5/8" × 4-13/32" × 11-45/64") (including feet, controls and terminals)
Weight:	3.1 kg (6 lbs 13 oz)
■ Cassette deck (UDR-F88)	
Type:	Horizontal 4-track 2-channel stereo auto reverse cassette deck
Heads:	1 hard permalloy recording/playback head 1 double-gap ferrite erasing head
Tape speed:	4.75 cm/s
Included circuits:	Dolby B and C NR, Dolby HX Pro
Usable tapes:	Normal, chrome and metal
Power supply:	AC 230 V, 50 Hz
Power consumption:	14 W
Maximum external dimensions:	270 (W) × 112 (H) × 305 (D) mm (10-5/8" × 4-13/32" × 12-1/64") (including feet, controls and terminals)
Weight:	3.7 kg (8 lbs 3 oz)
■ Remote control unit (RC-830)	
Remote control system:	Infrared pulse
Number of buttons:	51
Power supply:	Two DC 1.5V R6P/AA batteries
Maximum external dimensions:	64 (W) × 195 (H) × 18 (D) mm (2-1/2" × 7-43/64" × 23/32")
Weight:	130 g (including batteries) (Approx. 4.6 oz)

* Maximum dimensions include controls, jacks, and covers
(W) = width (H) = height (D) = depth

- For improvement purposes, specifications and functions are subject to change without advanced notice

■ Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen

■ "DOLBY", the double-D symbol ☐☐ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation

16 TROUBLESHOOTING

Check the following once more before assuming there is a problem with the system.
1. Are connections proper?
2. Is the system being operated as explained in the operating instructions?

If the system does not seem to be operating properly, check as shown on the table below. If none of these checks apply to the problem, the system may be malfunctioning. Disconnect the power cord immediately and contact your store of purchase

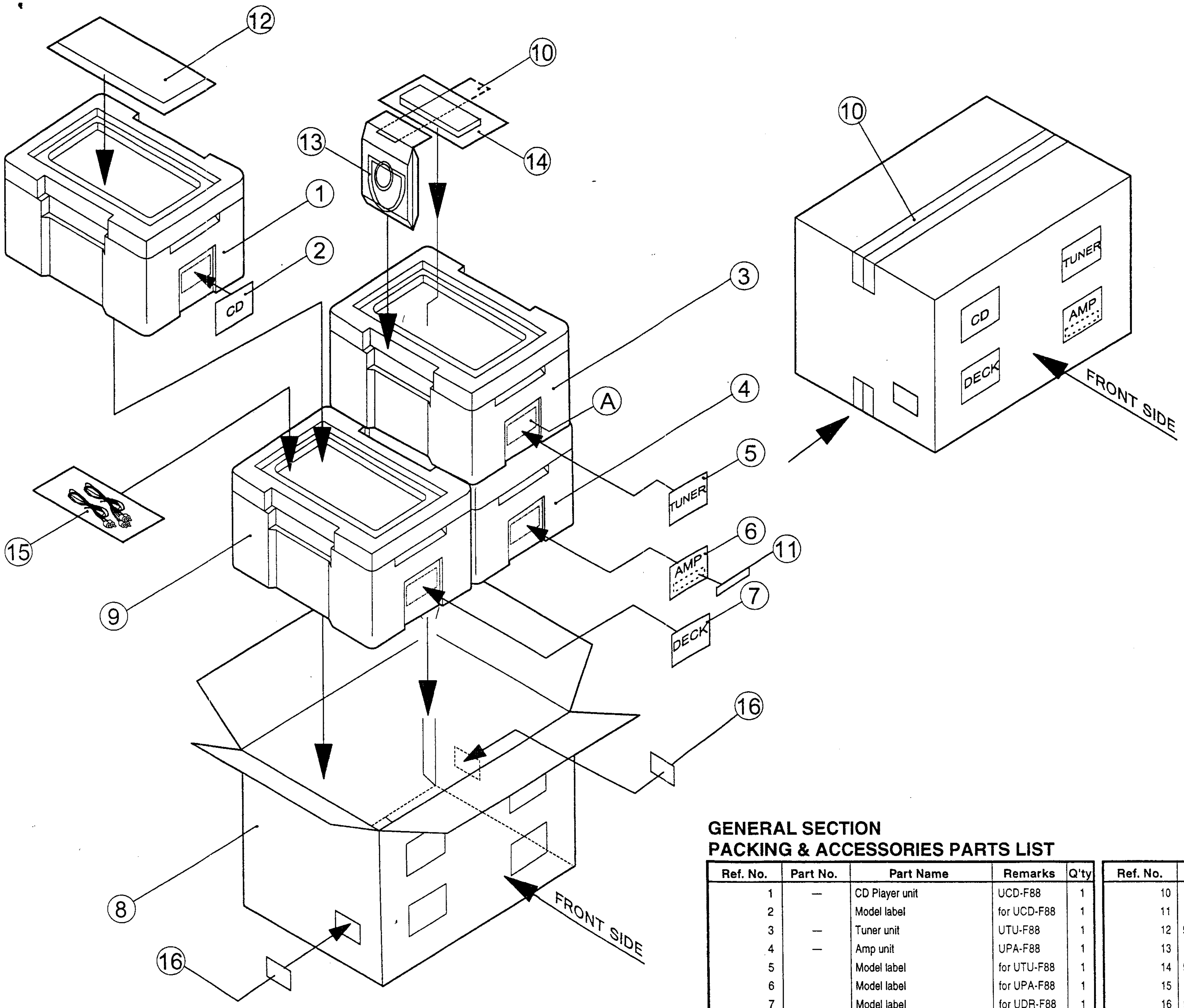
	Symptom	Cause	Countermeasure	Page
General	Power does not turn on when power switch is pressed	• Power cord is not plugged into a power outlet	• Plug the power cord securely into an outlet	5
	No sound is produced from the speakers	• VOLUME control is turned down • Headphones are connected • Speaker cords are not securely connected	• Set the control to an appropriate position • Disconnect the headphones • Connect securely	6 6 5
	No treble sound is produced, or the position of the instruments is unclear	• Speaker polarities (⊕ and ⊖) are inverted	• Connect the speaker cords properly	5
	A source other than the desired one is heard	• Function is not properly set	• Set the desired function using the INPUT SELECTOR control	6
	Remote control unit does not work	• Pre-main amplifier unit's power is not on • Batteries are not properly inserted • Batteries are spent	• Set the POWER switch to the "ON" position • Insert the batteries properly • Replace the batteries with new ones	3 8 8
Cassette deck	Recording does not start when REC/REC MUTE button is pressed	• No cassette tape is loaded • Accidental erasure protection tabs are broken off	• Load a cassette tape • Cover the tab holes with cellophane tape	16 6
	Sound is broken or no sound is produced during recording and playback	• Heads are dirty • Cassette tape is defective	• Clean the heads. • Replace the cassette tape	25 -
	Humming sound is heard while playing cassette tapes.	• Noise from a TV (Noise may be produced by some types of TVs.)	• Move the TV away from the system • Turn the TV off	4 -
	Wow (shaky sound) is heavy during recording or playback	• Capstans or pinch rollers are dirty	• Clean them	25
Tuner	Hissing sound is heard in FM programs	• Antenna direction is poor • Signals from the broadcast station are weak	• Change the direction of the antenna • Install an outdoor antenna	4 4
	Hissing sound is heard in AM programs	• Noise from a TV or interference from a broadcast station.	• Turn the TV off • Change the direction of the loop antenna • Install an outdoor antenna	- - 4
	Humming sound is heard in AM programs	• Signals on the power cord are being modulated by the power source frequency	• Insert the power cord in the opposite direction • Install an outdoor antenna	- 4
CD player	Total number of tracks not displayed when disc is loaded	• Disc is loaded upside-down • Disc is dirty • Disc is not of the specified type	• Reload the disc • Clean the disc • Replace with a disc of the specified type	20 25 -
	Nothing happens when operating buttons are pressed Disc stops in the middle of a track and will not play properly	• Disc is loaded upside-down • Foreign object on disc tray • Disc is dirty • Disc is scratched	• Reload the disc • Remove the disc and the foreign object • Clean the disc • Replace with an unscratched disc	20 20 25 -
	Sound is broken	• Dirt, fingerprints, spittle, etc. on disc • Disc is scratched • Player is in an unstable place and vibrates strongly	• Clean the disc • Replace with an unscratched disc • Place the player in a stable place with no vibrations	25 - -
	Humming sound is heard when disc is played	• Signals on the power cord are being modulated by the power source frequency	• Insert the power cord in the opposite direction	-

- **Protector circuit**
  The UPA-F88 is equipped with a high speed protector circuit
  This circuit protects internal parts from being damaged by strong currents generated in the set should the set be operated when the speaker terminals are incompletely connected or short-circuited.
  If this protector circuit is activated, a relay sound is produced, the output to the speakers is interrupted, and the function and power LEDs flash to indicate that there is a problem. If this should happen, unplug the power cord, check the speaker connections, then plug in the power cord and turn the power back on. After several seconds, a relay sound is heard and the set starts operating properly.
- The set may not operate properly due to such external influences as lightning or static electricity. If this happens, either turn off the power with the pre-main amplifier's POWER switch or unplug the power cord, wait approximately 5 seconds, then plug the power cord back in

PACKING VIEW

OVER ALL

Asia Model Only

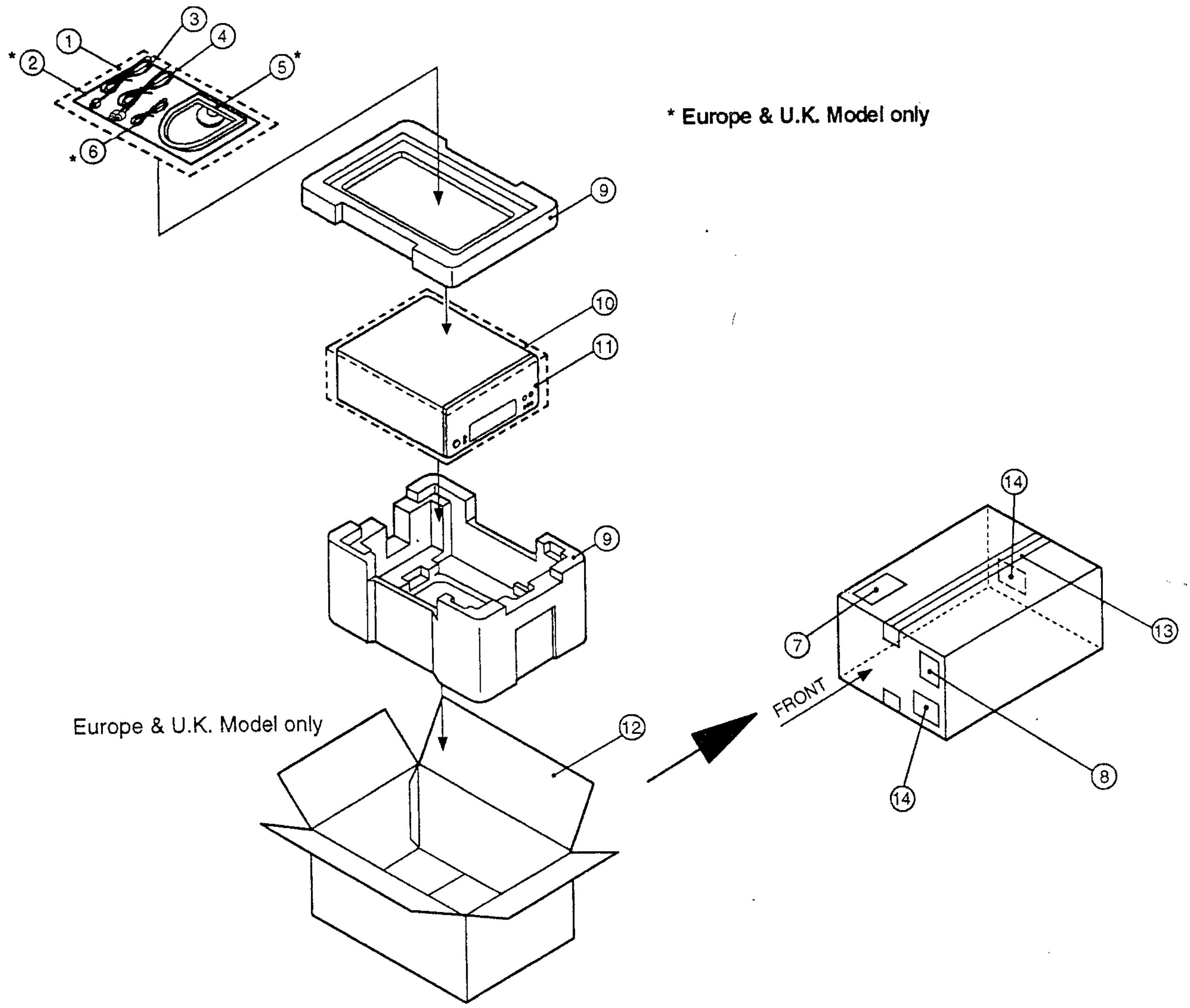

12
10
13
14
1
2
CD
3
A
4
5
TUNER
6
AMP
11
7
DECK
15
9
16
8
16
FRONT SIDE
10
TUNER
CD
AMP
DECK
FRONT SIDE

GENERAL SECTION
PACKING & ACCESSORIES PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	CD Player unit	UCD-F88	1
2		Model label	for UCD-F88	1
3	—	Tuner unit	UTU-F88	1
4	—	Amp unit	UPA-F88	1
5		Model label	for UTU-F88	1
6		Model label	for UPA-F88	1
7		Model label	for UDR-F88	1
8	960 0082 209	Carton case		1
9	—	Cassette deck unit	UDR-F88	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
10	—	Scotch tape		1
11		Serial No.		1
12	960 0082 306	Operating instructions		1
13		Accessory ass'y		1
14	960 0081 200	Remocon (RC-829)	Asia model	1
15		Cord ass'y		1
16	960 0082 102	Label control		2

TUNER SECTION (UTU-F88)



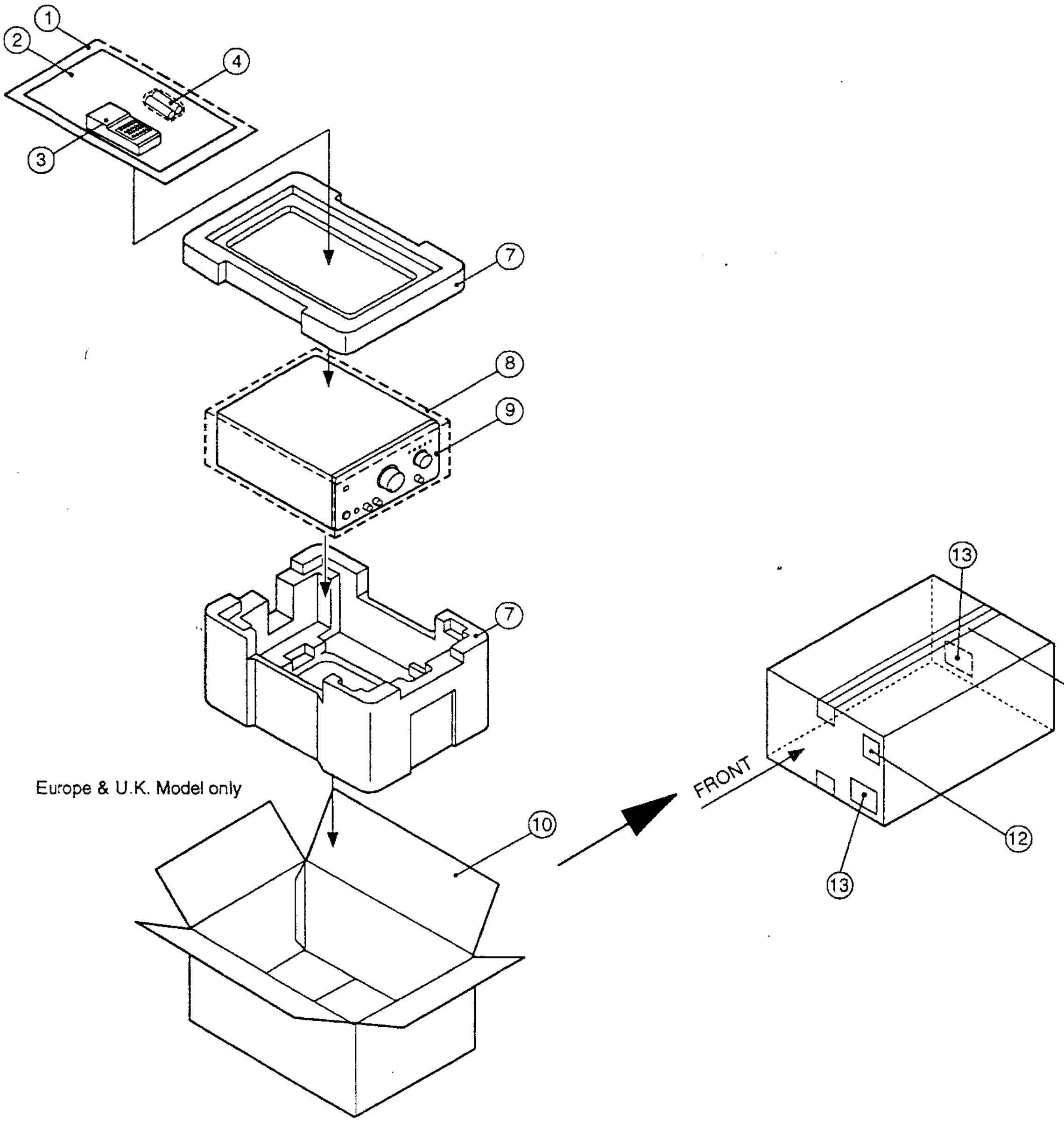
* Europe & U.K. Model only

Europe & U.K. Model only

TUNER SECTION (UTU-F88)
PACKING & ACCESSORIES PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	505 0249 010	Poly bag	for accessories	1
2	960 0082 319	Operating instructions		1
3	960 0006 104	RCA cord		1
4	960 0031 108	2P pin cord		1
5	960 0004 106	AM loop antenna		1
6	960 0004 203	FM Antenna wire		1
7		Bar code label	Europe & U.K. model	1
9	960 0079 403	Cushion Ass'y		1
10	505 8092 023	Poly bag set		1
11	—	Tuner unit	UTU-F88	1
12		Carton case		1
13	—	Scotch tape		1
14		Label control	Europe & U.K. model	2

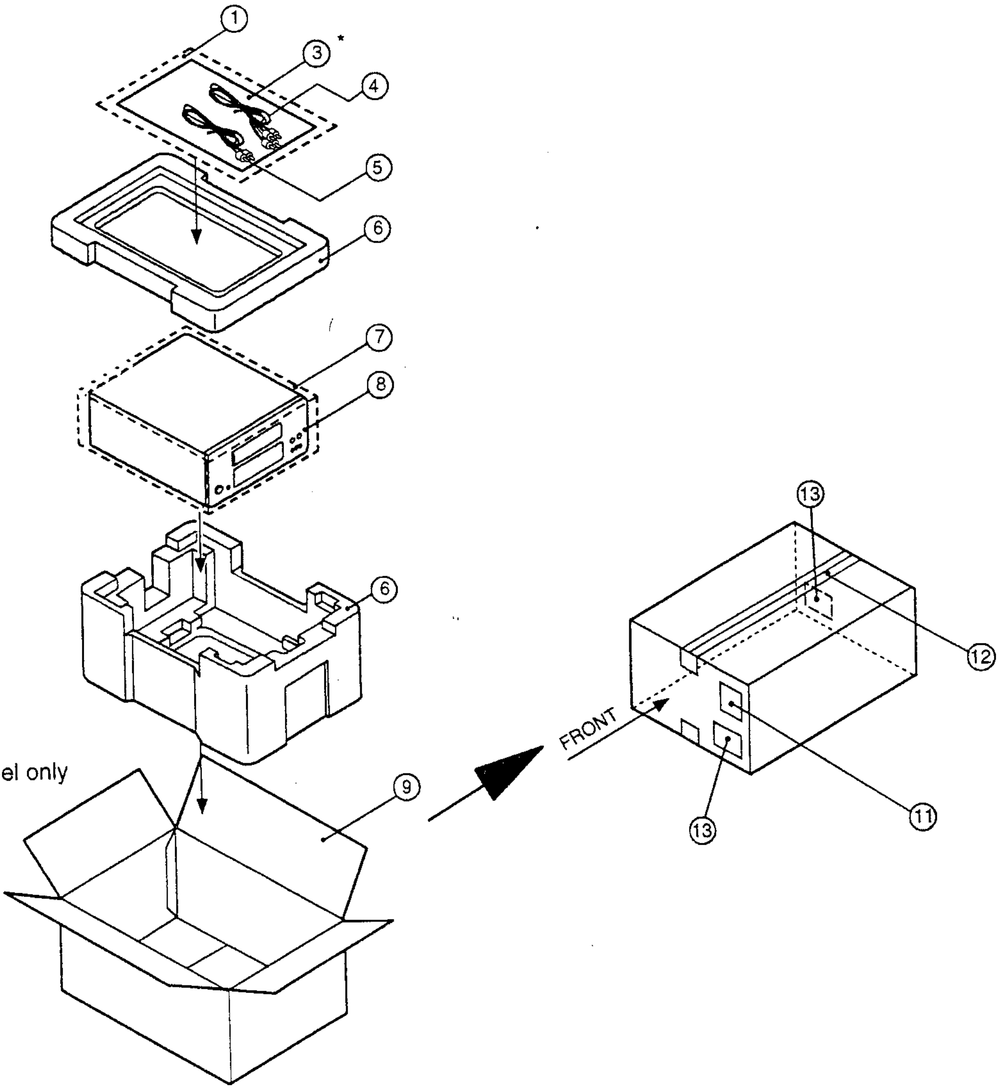
PRE-MAIN AMP. SECTION (UPA-F88)



PRE-MAIN SECTION (UPA-F88)
PACKING & ACCESSORIES PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	515 0061 007	Poly bag	for accessories	1
2	960 0079 322	Operating instructions	Europe model	1
	960 0079 335	Operating instructions	U.K. model	1
3	960 0081 200	Remocon (RC-829)	Asia model	1
	960 0081 213	Remocon (RC-830)	Europe & U.K.model	1
4	—	Battery dry		2
7	960 0079 403	Cushion Ass'y		1
8	505 8092 023	Poly bag set,		1
9	—	Amp unit	UPA-F88	1
10		Carton case		1
11	—	Scotch tape		1
12		Bar code label	Europe & U.K.model	1
13		Label control	Europe & U.K. model	2

CD PLAYER SECTION (UCD-F88)



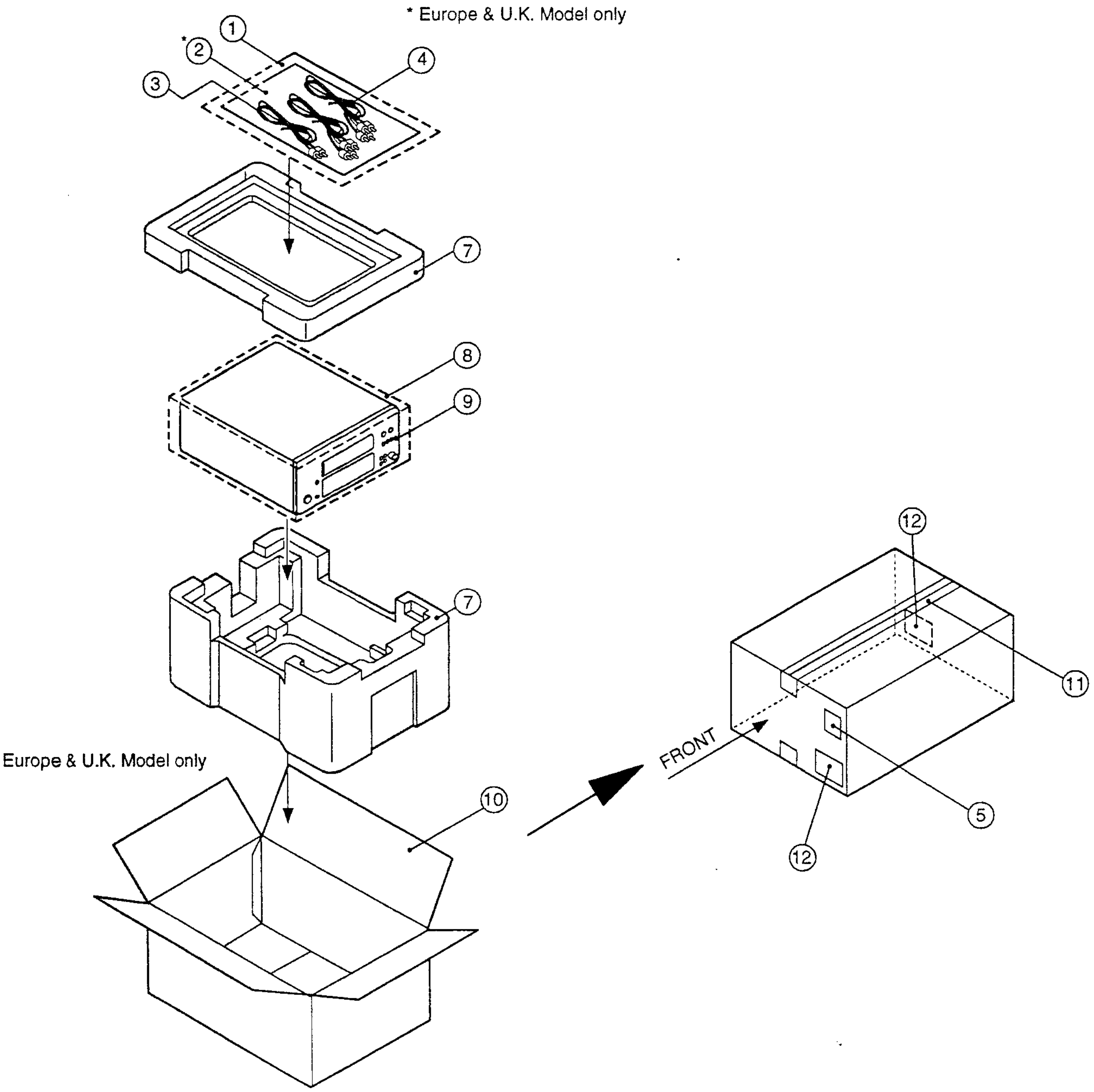
* Europe & U.K. Model only

Europe & U.K. Model only

CD PLAYER SECTION (UCD-F88) PACKING & ACCESSORIES PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	505 0249 010	Poly bag	for accessories	1
3	960 0083 910	Operating instructions		1
4	960 0031 108	2P pin cord		1
5	960 0006 104	RCA cord		1
6	960 0079 403	Cushion Ass'y		1
7	505 8092 023	Poly bag set		1
8	—	CD player unit	UCD-F88	1
9		Carton case		1
11		Bar code label	Europe & U.K. model	1
12	—	Scotch tape		1
13		Label control	Europe & U.K. model	2

CASSETTE PLAYER SECTION (UDR-F88)



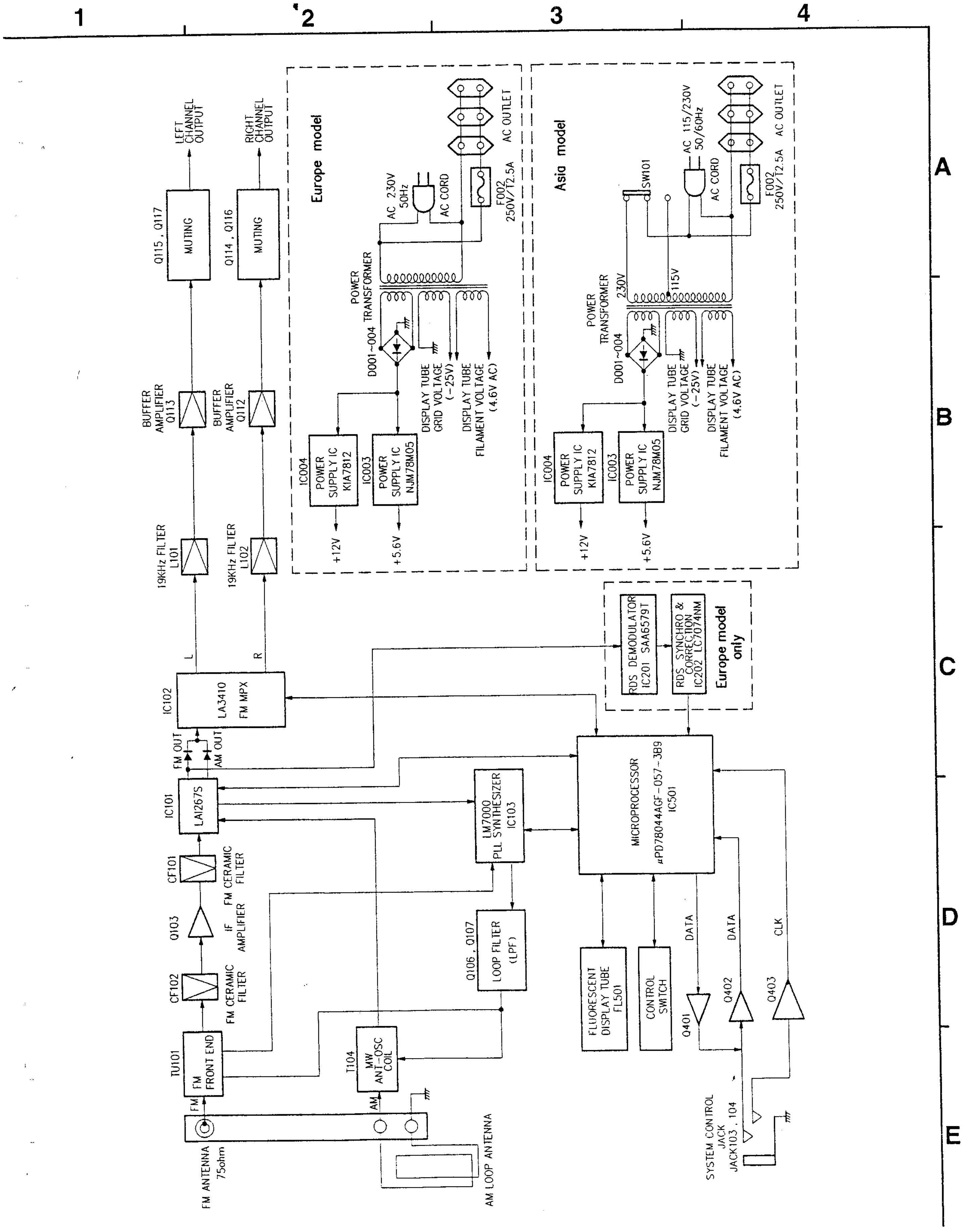
* Europe & U.K. Model only

Europe & U.K. Model only

CASSETTE DECK SECTION (UDR-F88)
PACKING & ACCESSORIES PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	505 0249 010	Poly bag	for accessories	1
2	960 0084 919	Operating instructions		1
3	960 0006 104	RCA cord		1
4	960 0031 108	2P pin cord		2
5		Bar code label	Europe & U.K. model	1
7	960 0079 403	Cushion Ass'y		1
8	505 8092 023	Poly bag set		1
9	—	Cassette deck unit	UDR-F88	1
10	960 0085 015	Carton case		1
11	—	Scotch tape		1
12		Label control	Europe & U.K. model	2

BLOCK DIAGRAM


1
2
3
4
A
B
C
D
E
LEFT CHANNEL OUTPUT
RIGHT CHANNEL OUTPUT
Q115, Q117
MUTING
Q114, Q116
MUTING
BUFFER AMPLIFIER Q113
BUFFER AMPLIFIER Q112
19KHz FILTER L101
19KHz FILTER L102
L
R
IC102
LA3410
FM MPX
FM OUT
AM OUT
IC101
LA1267S
CF101
FM CERAMIC FILTER
Q103
IF AMPLIFIER
CF102
FM CERAMIC FILTER
TU101
FM FRONT END
FM
AM
T104
MW ANT-OSC COIL
FM ANTENNA 75ohm
AM LOOP ANTENNA
LM7000
PLL SYNTHESIZER
IC103
Q106, Q107
LOOP FILTER (LPF)
Europe model
AC OUTLET
AC 230V 50Hz
AC CORD
F002 250V/T2.5A
POWER TRANSFORMER
D001~004
DISPLAY TUBE GRID VOLTAGE (−25V)
DISPLAY TUBE FILAMENT VOLTAGE (4.6V AC)
IC004
POWER SUPPLY IC KIA7812
IC003
POWER SUPPLY IC NJM78M05
+12V
+5.6V
Asia model
SW101
AC 115/230V 50/60Hz
AC CORD
AC OUTLET
F002 250V/T2.5A
POWER TRANSFORMER
230V
115V
D001~004
DISPLAY TUBE GRID VOLTAGE (−25V)
DISPLAY TUBE FILAMENT VOLTAGE (4.6V AC)
IC004
POWER SUPPLY IC KIA7812
IC003
POWER SUPPLY IC NJM78M05
+12V
+5.6V
RDS DEMODULATOR IC201 SAA6579T
RDS SYNCHRO & CORRECTION IC202 LC7074NM
Europe model only
MICROPROCESSOR
μPD78044AGF-057-3B9
IC501
FLUORESCENT DISPLAY TUBE FL501
CONTROL SWITCH
DATA
DATA
CLK
Q401
Q402
Q403
SYSTEM CONTROL JACK
JACK103, 104

TUNER SECTION

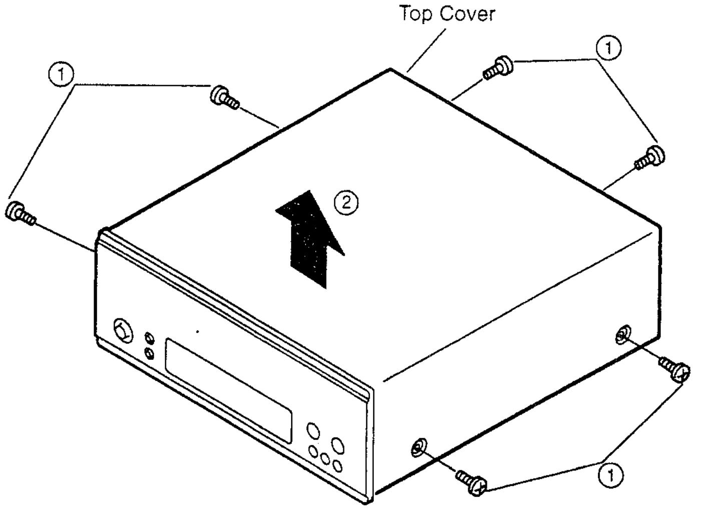
DISASSEMBLY PROCEDURES

(Assembly is performed in the reverse order.)

1. Top Cover and Front Panel

① Remove 6 screws mounting on the Top Cover.

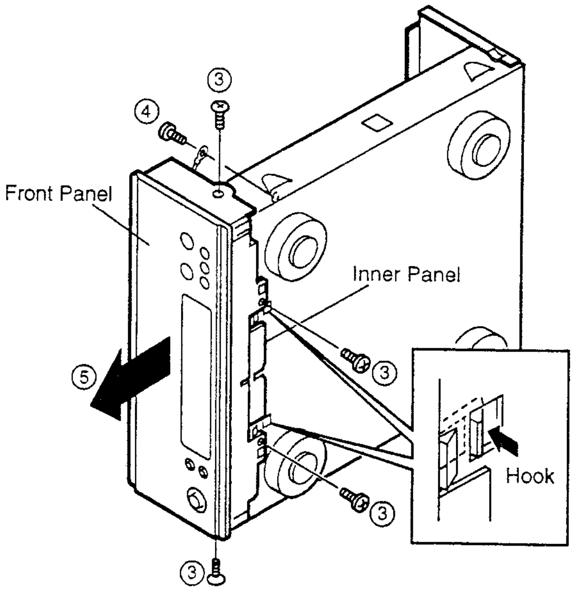
② Detach the Top Cover in the arrow direction.


Top Cover
①
①
②
①

③ Remove 2 each screws fastening the Front Panel on the bottom and both sides.

④ Remove a screw attached the wire on the chassis.

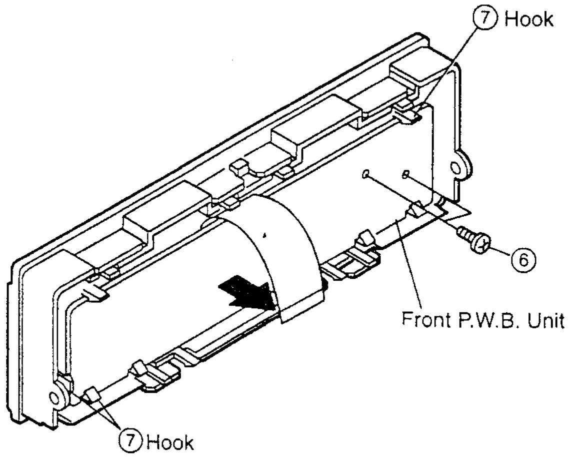
⑤ While releasing 2 hooks of inner panel from the chassis, pull toward arrow direction and detach the Front Panel and the Inner Panel as a whole.


③
④
Front Panel
Inner Panel
⑤
③
Hook
③
③

2. Front P.W.B. Unit

⑥ Remove 2 screw fastening the Front P.W.B. Unit.

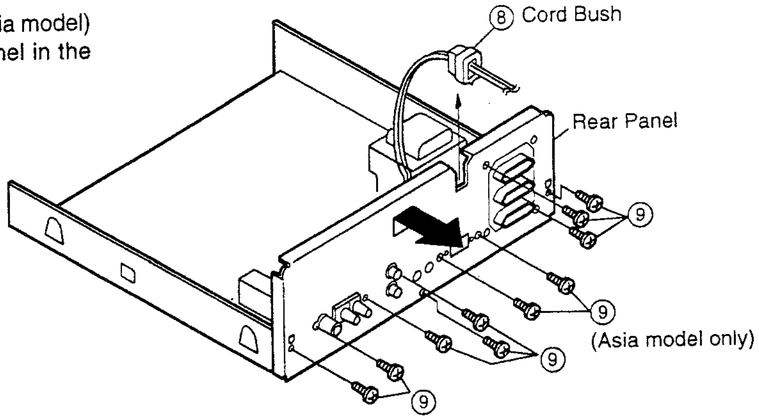
⑦ Release 7 hooks and detach the Front P.W.B. Unit in the arrow direction.


⑦ Hook
⑥
Front P.W.B. Unit
⑦Hook

3. Rear Panel and Main P.W.B. Unit

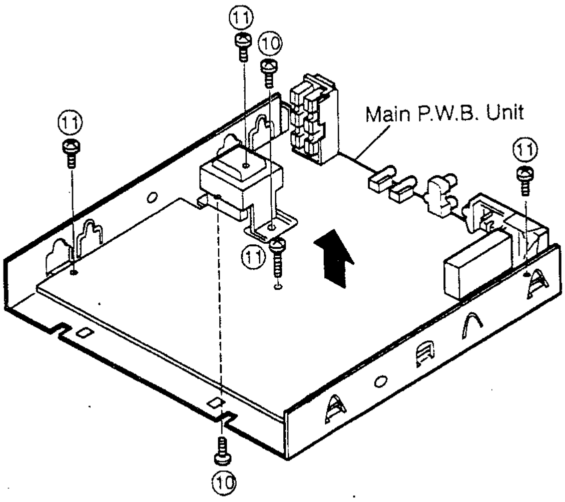
⑧ Remove the Cord Bush from the Rear Panel.

⑨ Remove 8 screws (Europe model) / 10 screws (Asia model) fixing the Rear Panel, then detach the Rear Panel in the arrow direction.


⑧ Cord Bush
Rear Panel
⑨
⑨
(Asia model only)
⑨
⑨

⑩ Remove 2 screws mounting on the transformer.

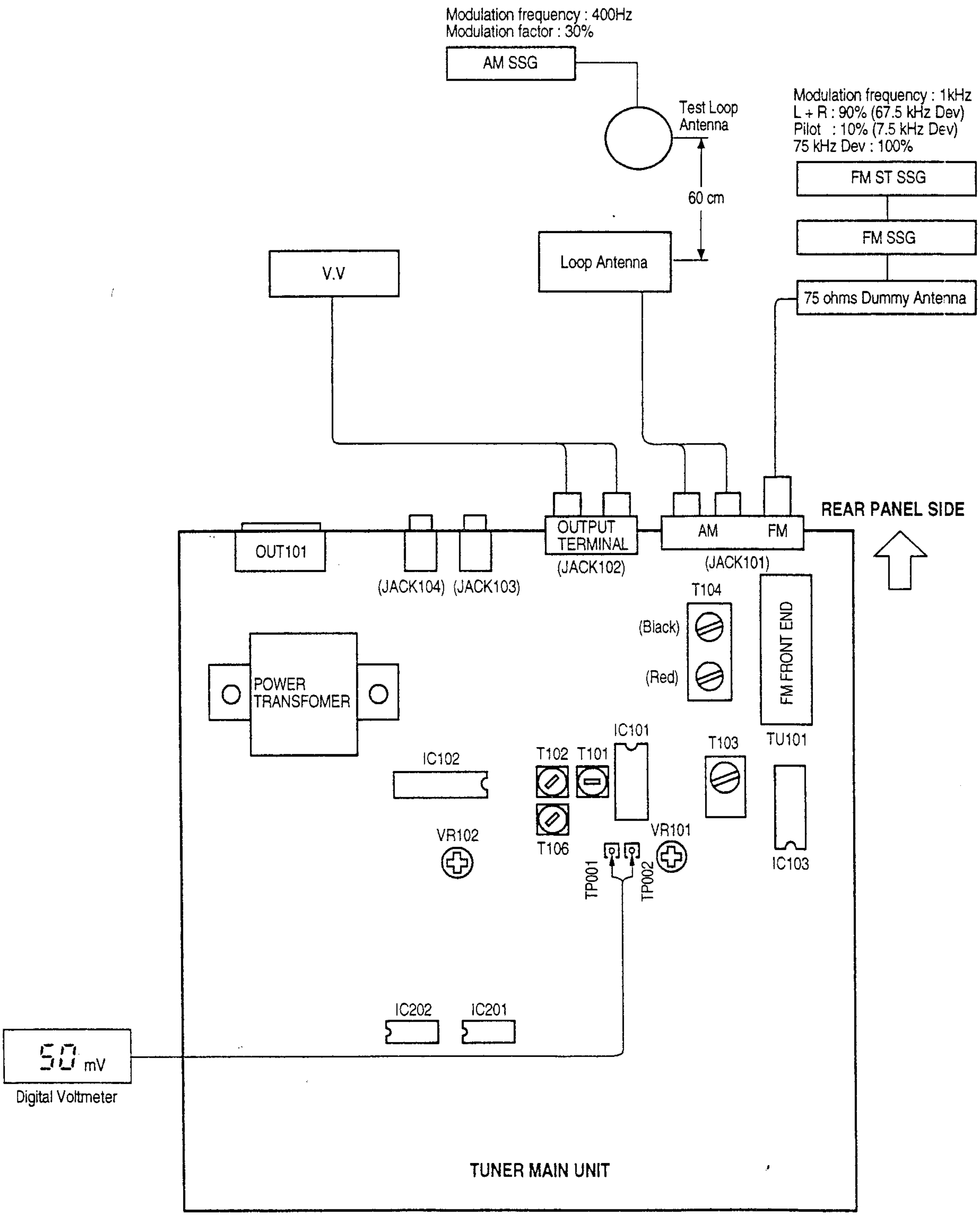
⑪ Remove 4 screws fastening the Main P.W.B. Unit, and detach the Main P.W.B. Unit in the arrow direction.


⑪
⑩
Main P.W.B. Unit
⑪
⑪
⑪
⑩

TUNER SECTION

ADJUSTMENTS

WIRING DIAGRAM


Modulation frequency : 400Hz
Modulation factor : 30%
AM SSG
Test Loop Antenna
60 cm
Loop Antenna
Modulation frequency : 1kHz
L + R : 90% (67.5 kHz Dev)
Pilot : 10% (7.5 kHz Dev)
75 kHz Dev : 100%
FM ST SSG
FM SSG
75 ohms Dummy Antenna
V.V
OUTPUT TERMINAL
(JACK102)
AM
FM
(JACK101)
REAR PANEL SIDE
OUT101
(JACK104)
(JACK103)
T104
(Black)
(Red)
FM FRONT END
TU101
POWER TRANSFOMER
IC101
IC102
T102
T101
T103
T106
VR102
VR101
TP001
TP002
IC103
IC202
IC201
50 mV
Digital Voltmeter
TUNER MAIN UNIT

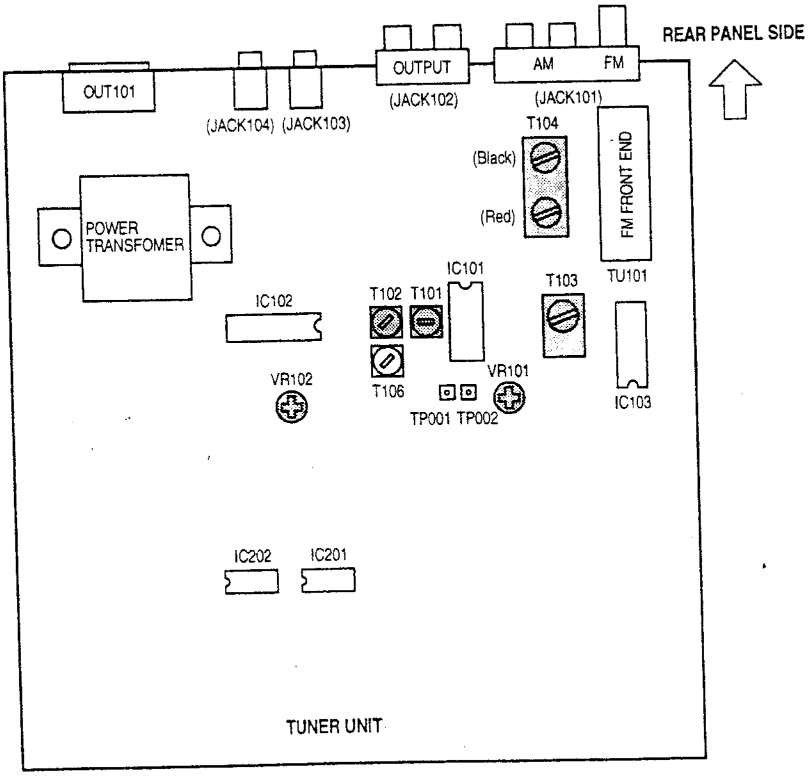
1. FM adjustment (BAND button: FM, FM MODE button: AUTO (STEREO))

Step	Adjustment item	Tuning point (channel setting)	Input					Output		Adjustment location	Setting value	Notes
			Measuring Instrument	Frequency	Input level	Modulation	Connection location	Measuring instrument	Connection location			
1	FM DC balance	98.00MHz	FM S.G.	98.00MHz	60dB µ	1kHz 75kHz DEV	FM antenna terminal	Digital volt meter	⊕ TP001 ⊖ TP002	T101	0±50mV	Perform with monaural modulation signal
2	Distortion	98.00MHz	FM S.G.	98.00MHz	60dB µ	1kHz 75kHz DEV	FM antenna terminal	Distortion factor meter	Output jack	T102	Minimum distortion	Perform with monaural modulation signal
3	Repeat Steps 1 and 2											
4	Auto stop level	98.00MHz	FM S.G.	98.00MHz	22dB µ	1kHz 75kHz DEV	FM antenna terminal	Check for the lighting of TUNED	Output jack	VR101	Input level 22dB µ±4dB	(Level at which TUNED lights up) Level at which the output is provided
5	Stereo separation	98.00MHz	FM stereo modulator FM S.G.	98.00MHz	60dB µ	1kHz L or R : 67.5kHz DEV Pilot ; 7.5kHz DEV	FM antenna terminal	VTVM Oscilloscope	Output jack	VR102	Minimum R.ch. Output	Perform with L.ch. Input of FM stereo modulator

2. AM adjustment (BAND button: AM)

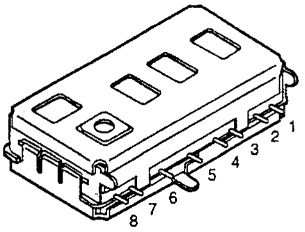
Step	Adjustment item	Tuning point (channel setting)	Input					Output		Adjustment location	Setting value	Notes
			Measuring Instrument	Frequency	Input level	Modulation	Connection location	Measuring instrument	Connection location			
1	IF	Clear frequency (without a broadcast)	AM IF sweep	—	Level at which AGC is not applied	—	AM antenna terminal	Oscilloscope	Output jack	T103	Waveform maximum and symmetry	
2	Band edge	522kHz	—	—	—	—	—	Digital voltmeter	⊕ R124 (10kohm) ⊖ G	T104 Black	1.2V±0.2v	
		1611kHz								—	Approx. 7.6v	No place to adjust
3	Tracking	603kHz	AM S.G.	603kHz	Level at which AGC is not applied	400Hz 30%	Loop antenna	VTVM	Output terminal	T104 Red	Maximum output	
4	Repeat Steps 2 and 3, and set the output to maximum.											

TUNER MAIN UNIT (Component Side)



TUNER SECTION

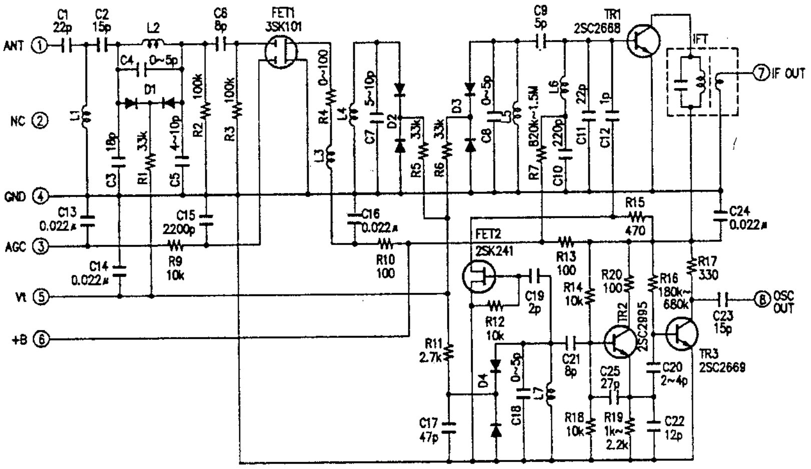
Front End (TU101)
Part No.: 960 0037 319 Europe model



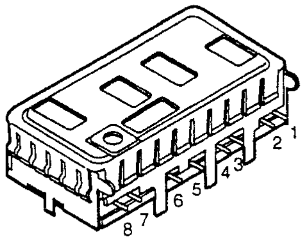
EXTERNAL TERMINALS
1. ANT
2. NC
3. AGC
4. GND
5. Vt
6. +B
7. IF OUT
8. OSC OUT

NOTES

1) TERMINAL NUMBER REFER TO OVERALL APPEARANCE	
2) RECEIVING FREQUENCY	87.5 ~ 108 MHz
3) INPUT IMPEDANCE	75 ohms
4) OUTPUT IMPEDANCE	300 ohms
5) SUPPLY VOLTAGE	+B 12 V
6) TUNING VOLTAGE	Vt 1.6 ~ 8.0 V
7) AGC VOLTAGE	5V


ANT ①
NC ②
GND ④
AGC ③
Vt ⑤
+B ⑥
C1 22p
C2 15p
L2
C6 8p
FET1 3SK101
C4 0~5p
D1
L1
C3 18p
R1 33k
C5 4~10p
R2 100k
R3 100k
R4 0~100
L4
L3
C7 5~10p
D2
R5 33k
R6 33k
D3
C8 0~5p
L5
C9 5p
TR1 2SC2668
R7 820k~1.5M
C10 220p
L6
C11 22p
C12 1p
IFT
⑦ IF OUT
C13 0.022μ
C14 0.022μ
C15 2200p
R9 10k
C16 0.022μ
R10 100
R15 470
C24 0.022μ
FET2 2SK241
R13 100
C19 2p
R12 10k
R14 10k
R20 100
R16 180k~680k
R17 330
C23 15p
⑧ OSC OUT
TR2 2SC2895
TR3 2SC2669
R11 2.7k
D4
C18 0~5p
L7
C21 8p
C25 27p
C20 2~4p
C17 47p
R18 10k
R19 1k~2.2k
C22 12p

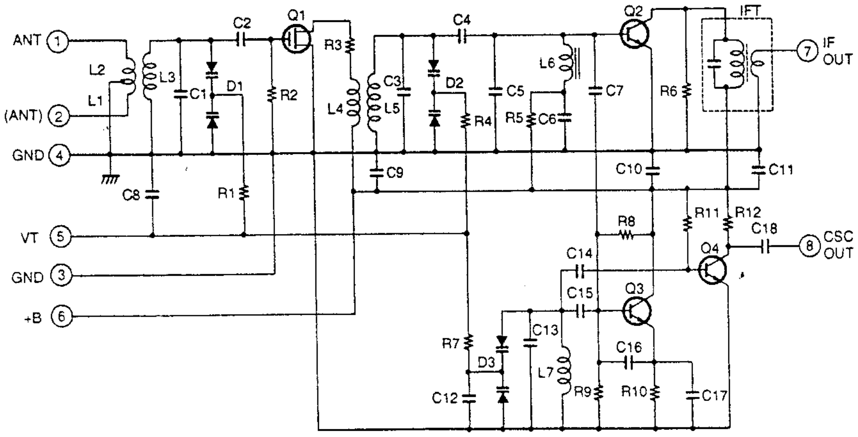
Front End (TU101)
Part No.: 960 0037 306 Asia model



EXTERNAL TERMINALS
1. ANT
2. OPEN
3. GND
4. GND
5. Vt
6. +B
7. IF OUT
8. OSC OUT

NOTES

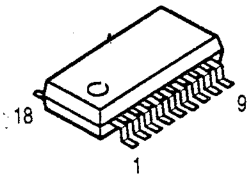
1) TERMINAL NUMBER REFER TO OVERALL APPEARANCE	
2) RECEIVING FREQUENCY	87.5 ~ 108 MHz
3) INPUT IMPEDANCE	① - ②: 300 ohms, ① - ④: 75 ohms

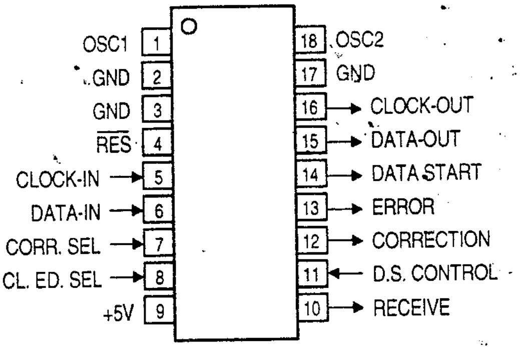

ANT ①
(ANT) ②
GND ④
VT ⑤
GND ③
+B ⑥
L2
L1
L3
C1
D1
C2
Q1
R2
R3
R1
C8
L4
C3
L5
C9
D2
R4
C4
C5
R5
C6
L6
C7
Q2
R6
IFT
⑦ IF OUT
C10
C11
R8
R11
R12
C18
⑧ CSC OUT
Q4
C14
C15
Q3
C13
R7
D3
C12
L7
C16
R9
R10
C17

SEMICONDUCTORS

● IC's

LC7074NM (IC202)...Europe model only



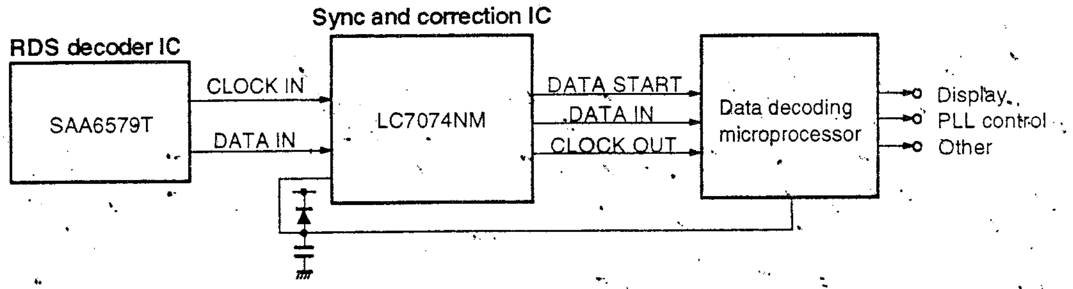


LC7074NM-TE-R Terminal Function

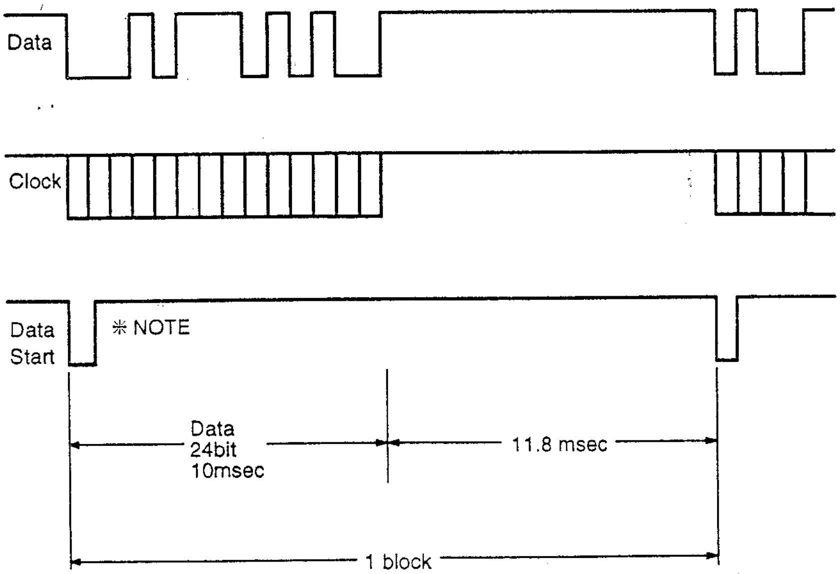
Pin No.	Symbol	I/O	INI	Function
1	OSC1	I	–	• 4 MHz ceramic oscillator connection.
2	GND	–	–	• Ground
3	GND	–	–	• Ground
4	$\overline{\text{RES}}$	I	–	• System reset input. • Reset and restart is accomplished by inputting the low level for 4 or more cycles.
5	CLOCK IN	I	H	• RDS LA2230 series demodulation clock input.
6	DATA IN	I	H	• RDS LA2230 serial demodulation data input.
7	CORR. SEL	I	H	• Error correction on/off selection input. • Sets the IC to correct errors in the RDS demodulation data or to output the data without correction. When input is 0 : No corrections are made When input is 1 : Corrections are executed
8	CL. ED. SEL	I	H	• Serial data clock polarity selection input. When input is 0 : Serial data output is enabled at the rise of output clock. (Serial data output changes at the fall of the output clock.) When input is 1 : Serial data output is enabled at the fall of the output clock. (Serial data output changes at the rise of the output clock.) **Note:** Set at the time of $\overline{\text{RES}}$ input.
9	+5V	–	H	• Power supply
10	RECEIVE (NC)	O	H	• Output during RDS data reception. • After the completion of sync detection, there is a low-level output while the serial data is being output. There is a high-level output at other times. • Open drain output.
11	D.S. CONTROL	I	H	• Block data start signal control input. When input is 0 : Data start signal is output for all blocks. When input is 1 : Data start signal is output for only the second block.
12	CORRECTION (NC)	O	H	• Output without error correction. • There is a low level output when the output data of the serial data output have been corrected when correction is not possible. There is a high-level output when correction have not been applied. • Oppen drain output.
13	ERROR (NC)	O	H	• Presence error output. • There is a low-level output when the output data of the serial data output has an error and correction is not possible. There is a high-level output when there is no error or when the error has been corrected. • Open drain output.
14	DATA START	O	H	• Block data start signal of the serial data output. Output with pull-up resistor.
15	DATA OUT	O	H	• Data output of the serial data output. Output with pull-up resistor.
16	CLOCK OUT	O	H	• Clock output of the serial data output. Output with pull-up resistor.
17	GND	–	–	• Ground
18	OSC2	O	–	• 4 MHz ceramic oscillator connection.

TUNER SECTION

Structure of the RDS Data Processing System


Sync and correction IC
RDS decoder IC
SAA6579T
CLOCK IN
DATA IN
LC7074NM
DATA START
DATA IN
CLOCK OUT
Data decoding microprocessor
Display
PLL control
Other

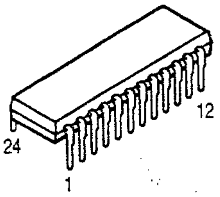
Serial Data Output Timing Chart

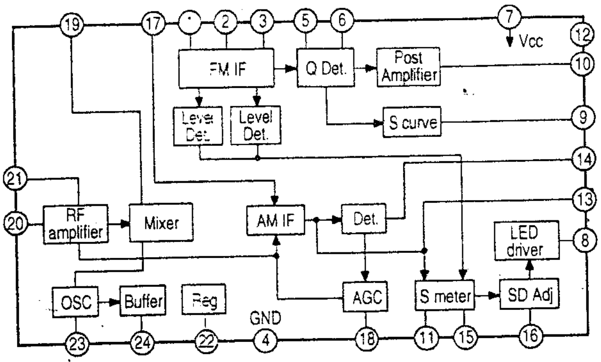

Data
Clock
Data Start
※ NOTE
Data
24bit
10msec
11.8 msec
1 block

NOTE: Using the D.S. CONTROL input, only the second block among the entire 4 blocks of RDS data can be switched between the data start output and the total blocks' data start output.

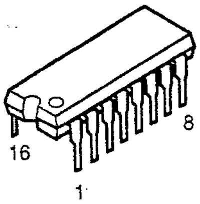
TUNER SECTION

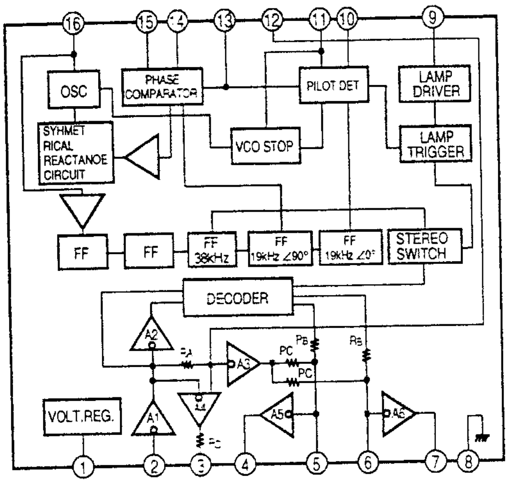
LA1267S (IC101)



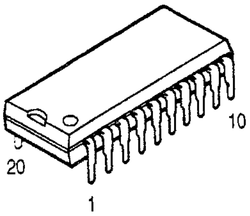

19
17
1
2
3
5
6
7
Vcc
12
FM IF
Q Det.
Post Amplifier
10
Level Det.
Level Det.
S curve
9
14
21
13
RF amplifier
Mixer
AM IF
Det.
LED driver
8
20
OSC
Buffer
Reg
GND
AGC
S meter
SD Adj
23
24
22
4
18
11
15
16

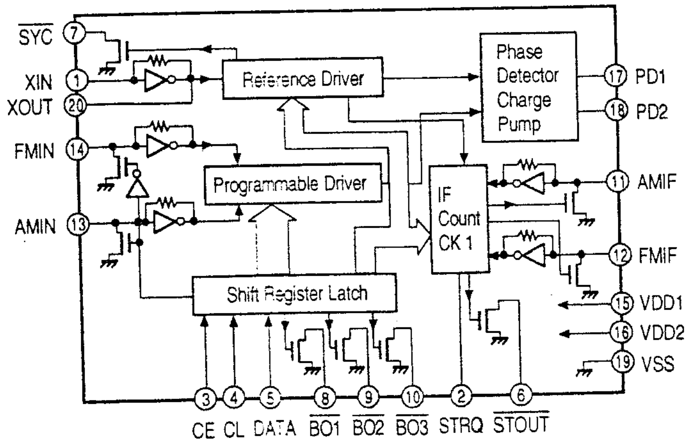
LA3410 (IC102)

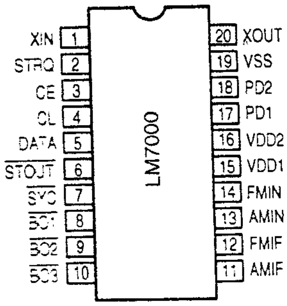



16
15
14
13
12
11
10
9
OSC
PHASE COMPARATOR
PILOT DET
LAMP DRIVER
SYHMETRICAL REACTANCE CIRCUIT
VCO STOP
LAMP TRIGGER
FF
FF
FF 38kHz
FF 19kHz ∠90°
FF 19kHz ∠0°
STEREO SWITCH
DECODER
A2
A3
A4
A1
A5
A6
VOLT.REG.
1
2
3
4
5
6
7
8

LM7000 (IC103)




SYC 7
XIN 1
XOUT 20
FMIN 14
AMIN 13
Reference Driver
Phase Detector Charge Pump
17 PD1
18 PD2
Programmable Driver
IF Count CK 1
11 AMIF
12 FMIF
15 VDD1
16 VDD2
19 VSS
Shift Register Latch
3
4
5
8
9
10
2
6
CE
CL
DATA
BO1
BO2
BO3
STRQ
STOUT

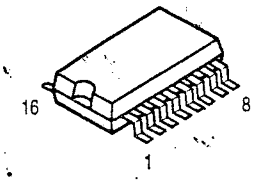

XIN 1
STRQ 2
CE 3
CL 4
DATA 5
STOUT 6
SYC 7
BO1 8
BO2 9
BO3 10
20 XOUT
19 VSS
18 PD2
17 PD1
16 VDD2
15 VDD1
14 FMIN
13 AMIN
12 FMIF
11 AMIF
LM7000

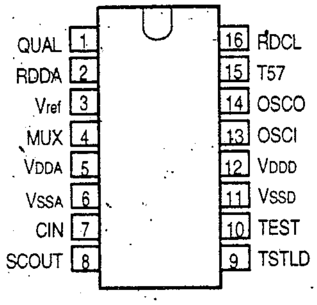
Pin Description

$\overline{\text{SYC}}$	: Clock (400kHz) for the controller
XIN, XOUT	: X'tal oscillator (7.2MHz) with built-in feedback resistor
FM IN, AM IN	: Local oscillator signal input
CE, CL, DATA	: Data input
$\overline{\text{B01}}$, $\overline{\text{B02}}$, $\overline{\text{B03}}$	: Band data output, $\overline{\text{B01}}$ can be set as the time base output (8Hz)
STRQ	: IF counter request input
$\overline{\text{STOUT}}$	: Auto research stop signal output
VDD1, VDD2, Vss	: Power supply (VDD2 is back-up power supply)
AMIF, FMIF	: IF signal input
PD1, PD2	: Charge pump output

TUNER SECTION

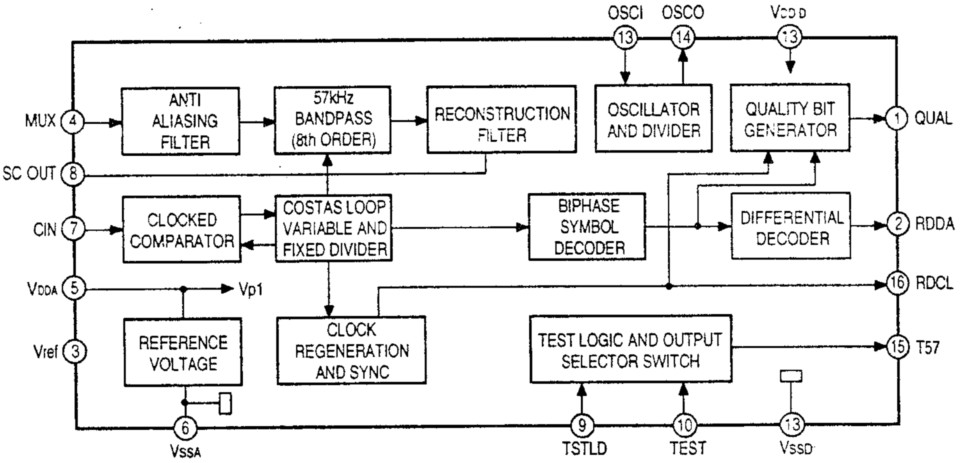
SAA6579T (IC201) ... Europe model only



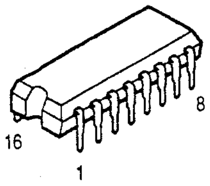

QUAL 1
RDDA 2
Vref 3
MUX 4
VDDA 5
VSSA 6
CIN 7
SCOUT 8
16 RDCL
15 T57
14 OSCO
13 OSCI
12 VDDD
11 VSSD
10 TEST
9 TSTLD

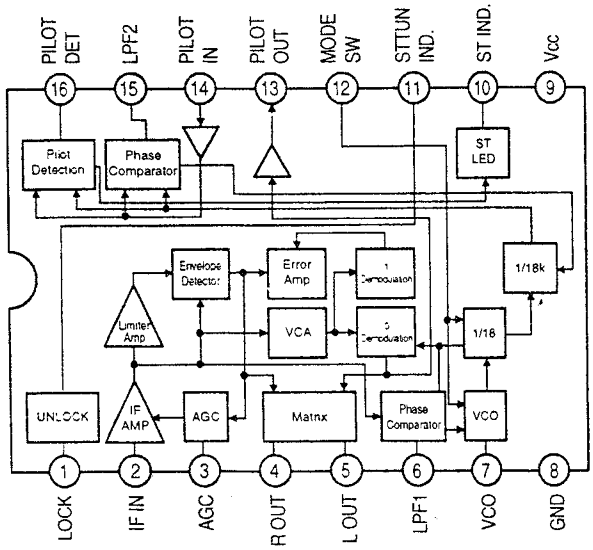
SAA6579T Terminal Function

Pin No.	Symbol	Description
1	QUAL	Quality indication output.
2	RDDA	RDS data output.
3	Vref	Reference voltage output (0.5 VDDA).
4	MUX	Multiplex signal input.
5	VDDA	+5V supply voltage for analog part.
6	VSSA	Ground for analog part (0V).
7	CIN	Subcarrier input to comparator.
8	SCOUT	Subcarrier ouput of reconstruction filter.
9	TSTLD	Test control.
10	TEST	Test enable input.
11	VSSD	Ground for digital part (0V).
12	VDDD	+5V supply voltage for digital part.
13	OSCI	Oscillator input.
14	OSCO	Oscillator output.
15	T57	57kHz clock signal output.
16	RDCL	RDS clock output.

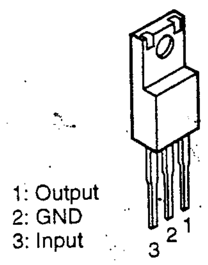

OSCI
OSCO
VDDD
13
14
13
MUX 4
ANTI ALIASING FILTER
57kHz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
1 QUAL
SC OUT 8
CIN 7
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
2 RDDA
VDDA 5
Vp1
16 RDCL
Vref 3
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
15 T57
6
VSSA
9
TSTLD
10
TEST
13
VSSD

TA2040AP (IC301)



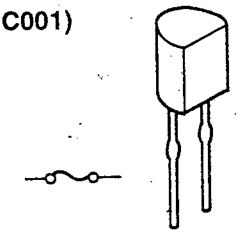

PILOT DET
LPF2
PILOT IN
PILOT OUT
MODE SW
STTUN IND.
ST IND.
Vcc
16
15
14
13
12
11
10
9
Pilot Detection
Phase Comparator
ST LED
Envelope Detector
Error Amp
1 Demodulation
1/18k
Limiter Amp
VCA
Demodulation
1/18
UNLOCK
IF AMP
AGC
Matrix
Phase Comparator
VCO
1
2
3
4
5
6
7
8
LOCK
IF IN
AGC
R OUT
L OUT
LPF1
VCO
GND

NJM7805FA
(IC003)
KIA7812FA
(IC004)


1: Output
2: GND
3: Input
3
2
1

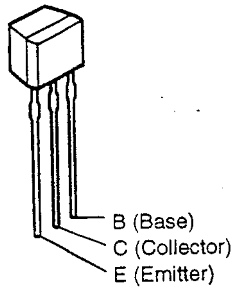
● IC PROTECTOR

ICP-N15 (IC001)

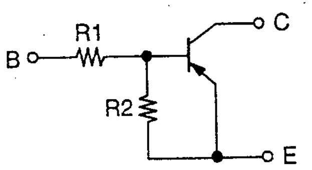


● TRANSISTORS

DTA114ES (PNP)
DTC144ES (NPN)
DTC343TS (NPN)

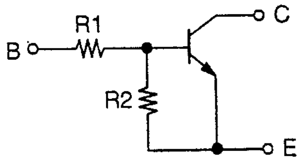

B (Base)
C (Collector)
E (Emitter)

PNP Type
DTA ES Series



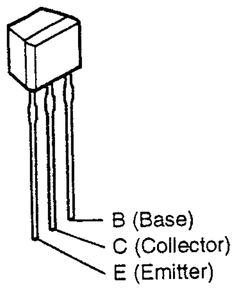
	R1	R2
DTA114ES	10 kohm	10 kohm

NPN Type
DTC ES/TS Series

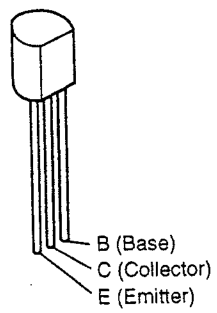


	R1	R2
DTC144ES	47 kohm	47 kohm
DTC343TS	4.7 kohm	—

2SA933S (S)
2SC1740S (R)

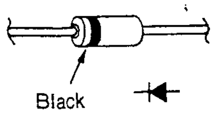

B (Base)
C (Collector)
E (Emitter)

KSA916 (Y)
KSC1845 (F)
KTC3194 (O)

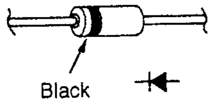

B (Base)
C (Collector)
E (Emitter)

● DIODES

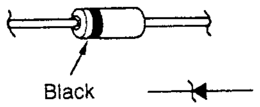
1N4002A



1SS131

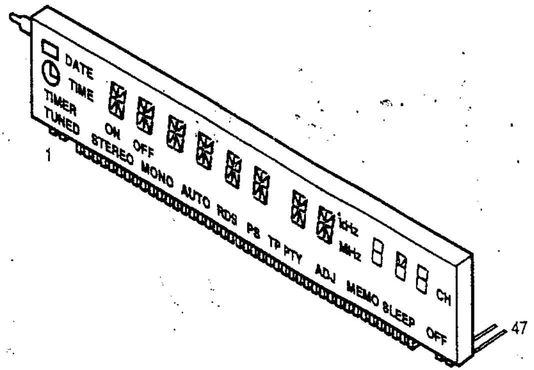


MTZJ6.2B
MTZJ8.2B
MTZJ27B



● FLUORESCENT DISPLAY TUBE 11 BT127GK (FL501)

(Part No. : 960 0007 103)


DATE
TIME
TIMER
TUNED
ON
OFF
STEREO
MONO
AUTO
RDS
PS
TP PTY
ADJ
kHz
MHz
MEMO SLEEP
OFF
CH
1
47

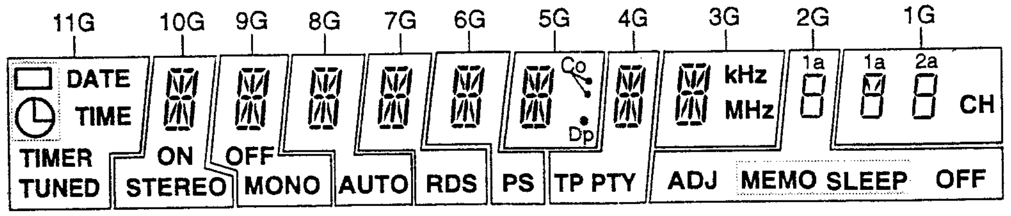
PIN CONNECTION

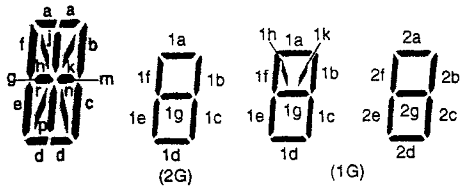
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Connection	F1	F1	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	NC	NC	NC	NC	NC	NC	NC	NC	NC

Pin No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Connection	NC	NC	NC	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F2	F2

NOTE 1) Fl and F2: .... Filaments
2) NP: .... No pin
3) NC: .... No connection
4) 1G through 11G: .... Gird

GIRD ASSIGNMENT


11G
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
DATE
TIME
TIMER
TUNED
ON
STEREO
OFF
MONO
AUTO
RDS
PS
TP PTY
Co
Dp
kHz
MHz
ADJ
MEMO SLEEP
OFF
1a
1a
2a
CH


a a
f
h
j
k
b
g
m
e
r
p
n
c
d d
1a
1f
1b
1g
1e
1c
1d
(2G)
1h
1a
1k
1f
1b
1g
1e
1c
1d
(1G)
2a
2f
2b
2g
2e
2c
2d

ILLUMINATION COLORS

Reddish orange ....☐ portion of above pattern
(Rsh. O x = 0.645, y = 0.355)
Green (G. x = 0.235, y = 0.405) ......Other portions

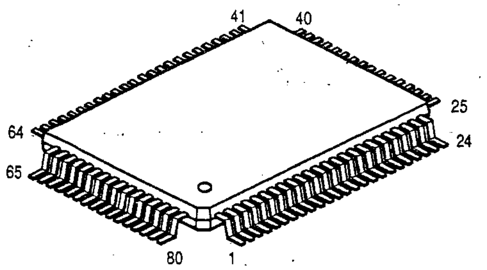
ANODE CONNECTION

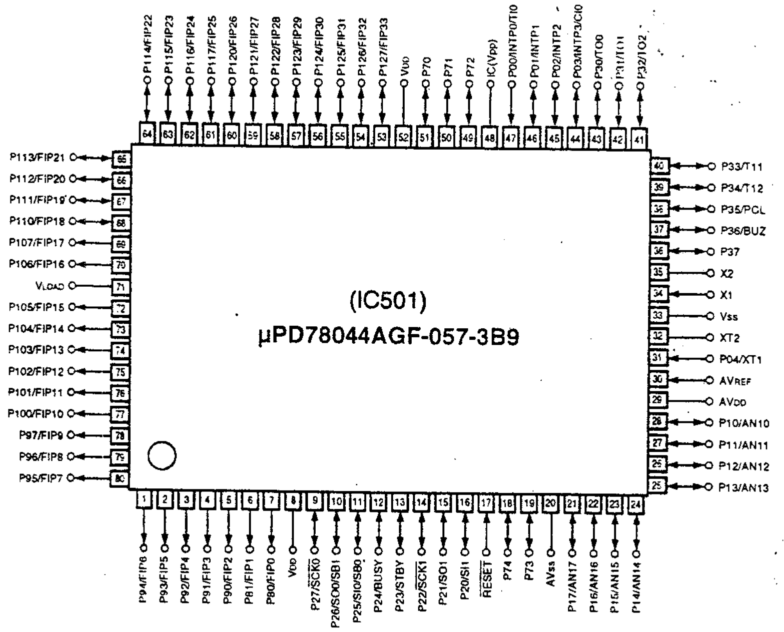
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	☐	a	a	a	a	a	a	a	a	1a	1a
P2	DATE	b	b	b	b	b	b	b	b	1b	1b
P3	◷	c	c	c	c	c	c	c	c	1c	1c
P4	TIME	d	d	d	d	d	d	d	d	1d	1d
P5	TIMER	e	e	e	e	e	e	e	e	1e	1e
P6	TUNED	f	f	f	f	f	f	f	f	1f	1f
P7	—	g	g	g	g	g	g	g	g	1g	1g
P8	—	h	h	h	h	h	h	h	h	ADJ	1h, 1k
P9	—	j	j	j	j	j	j	j	j	MEMO	2a
P10	—	k	k	k	k	k	k	k	k	SLEEP	2b
P11	—	m	m	m	m	m	m	m	m	OFF	2c
P12	—	n	n	n	n	n	n	n	n	—	2d
P13	—	p	p	p	p	p	p	p	p	—	2e
P14	—	r	r	r	r	r	r	r	r	—	2f
P15	—	ON	OFF	AUTO	RDS	PS	col	TP	kHz	—	2g
P16	—	STEREO	MONO	—	—	—	Dp	PTY	MHz	—	CH

TUNER SECTION

MICROPROCESSOR DOCUMENTATION

µPD78044AGF-057-3B9 : Part No. 960 0007 006 (IC105)


41
40
25
24
64
65
80
1


(IC501)
µPD78044AGF-057-3B9
P114/FIP22
P115/FIP23
P116/FIP24
P117/FIP25
P120/FIP26
P121/FIP27
P122/FIP28
P123/FIP29
P124/FIP30
P125/FIP31
P126/FIP32
P127/FIP33
VDD
P70
P71
P72
IC(Vpp)
P00/INTP0/TI0
P01/INTP1
P02/INTP2
P03/INTP3/CI0
P30/TO0
P31/TO1
P32/TO2
P113/FIP21
P112/FIP20
P111/FIP19
P110/FIP18
P107/FIP17
P106/FIP16
VLOAD
P105/FIP15
P104/FIP14
P103/FIP13
P102/FIP12
P101/FIP11
P100/FIP10
P97/FIP9
P96/FIP8
P95/FIP7
P33/TI1
P34/TI2
P35/PCL
P36/BUZ
P37
X2
X1
Vss
XT2
P04/XT1
AVREF
AVDD
P10/AN10
P11/AN11
P12/AN12
P13/AN13
P94/FIP6
P93/FIP5
P92/FIP4
P91/FIP3
P90/FIP2
P81/FIP1
P80/FIP0
VDD
P27/SCK0
P26/SO0/SB1
P25/SI0/SB0
P24/BUSY
P23/STBY
P22/SCK1
P21/SO1
P20/SI1
RESET
P74
P73
AVss
P17/AN17
P16/AN16
P15/AN15
P14/AN14

1. Overview

The functions of this microprocessor comprise the following three types.

a. Tuner functions

- Control operations required for receiving FM and AM broadcasts.

b. Timer functions

- These functions count the clock of the 24-hour display.
- These functions perform two types of timer operations, "everyday and sleep."

c. Display functions

- These functions output the drive signals of the fluorescent display tube.

NOTE1 Plugging the power cord into a power outlet while depressing both the STANDBY and MEMORY buttons will automatically register the frequencies used for tracking adjustments to the preset memory. These frequencies can be used for adjustments and other purposes.

	P1	P2	P3	P4	P5	P6	P7	P8	—	—
AM (kHz)	522	603	846	999	1098	1404	1512	1611		
	P11	P12	P13	P14	P15	—	—	—	—	—
FM (MHz)	87.50	89.00	98.00	100.10	108.00					

※ P9, P19 through P30 are AM 522 kHz, and P10, P16 through P18 are FM 87.50 MHz.

NOTE2 Plugging the power cord into a power outlet while depressing both the MEMORY and BAND buttons will initialize all settings including the current time and the contents of the timers and preset memory.

2. Receiving Band Table

Band	Receiving frequency	Local oscillator frequency	IF	Frequency division ratio	Comparison frequency	Step frequency	Other
FM	87.50 ~ 108.00MHz	98.20 ~ 118.70MHz	10.7MHz	1	25kHz	50kHz	
AM	522 ~ 1611kHz	972 ~ 2061kHz	450kHz	—	9kHz	9kHz	

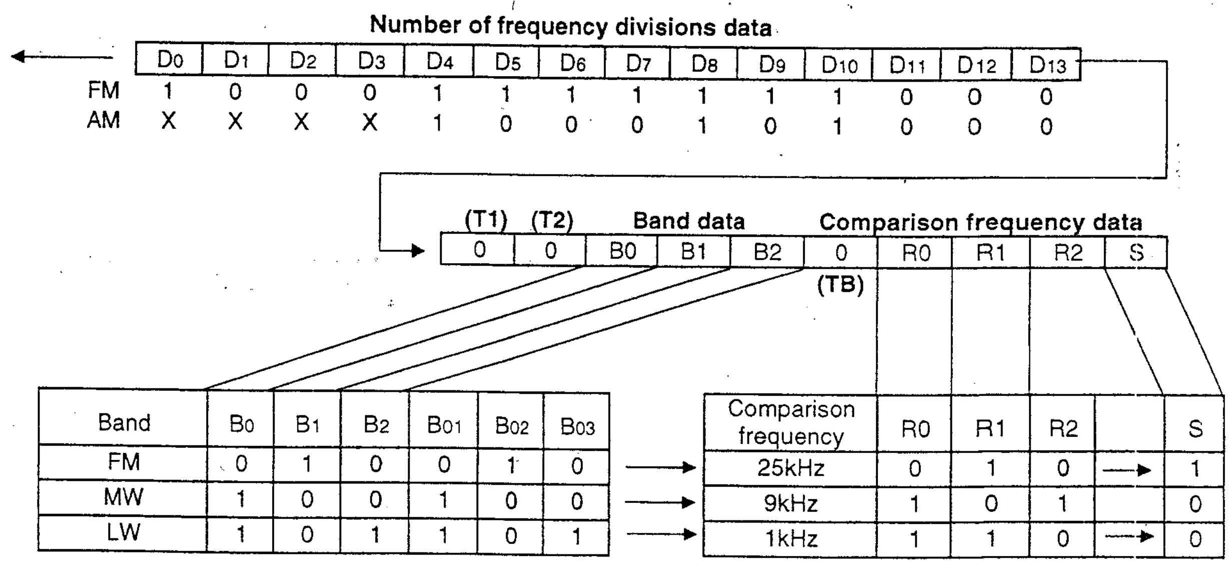
3. Signals sent to the LM7000 Programmable Divider

a. Signals to the programmable divider are sent from 3 sources: CE OUT, CLOCK OUT, and DATA OUT.

b. The programmable divider takes in DATA at CLOCK ⌠ , when CE equals 1.

c. The data is a 24-bit serial signal which is taken in to the programmable divider from the LSB.
(At the AM setting, D_0 through D_3 are ignored, so that D_4 becomes the LSB.)

d. The data is made up of the number of frequency divisions data, the band data, and the comparison frequency data.
(See diagram below.)


Number of frequency divisions data
(T1)
(T2)
Band data
Comparison frequency data
(TB)

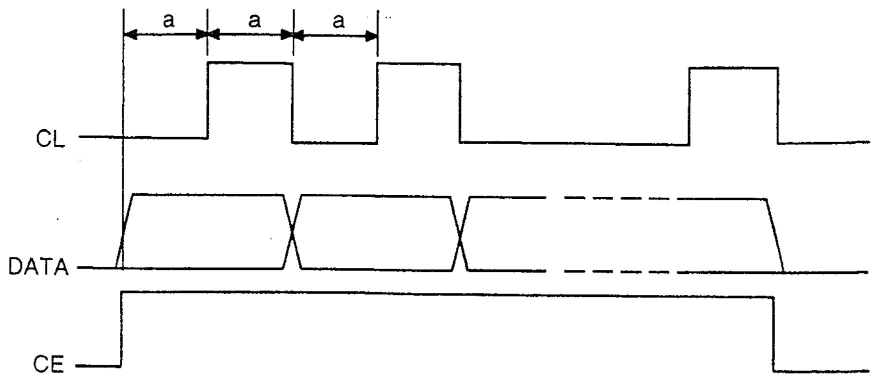
	D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	D_{13}
FM	1	0	0	0	1	1	1	1	1	1	1	0	0	0
AM	X	X	X	X	1	0	0	0	1	0	1	0	0	0

(T1)	(T2)	Band data			Comparison frequency data				
0	0	B0	B1	B2	0 (TB)	R0	R1	R2	S

Band	B_0	B_1	B_2	B_{01}	B_{02}	B_{03}
FM	0	1	0	0	1	0
MW	1	0	0	1	0	0
LW	1	0	1	1	0	1

Comparison frequency	R0	R1	R2		S
25kHz	0	1	0	→	1
9kHz	1	0	1		0
1kHz	1	1	0	→	0

e. Timing for sending
a = 2.5 µsec


a
a
a
CL
DATA
CE

µPD78044GF-057-3B9 : 262 1973 204 (IC501) Terminal Function

Pin	Port Name	Function Name	I/O	Ini	Act	Function
1	P94/RIP6	7G	O	L	H	Fluorescent tube digit signal output.
2	P93/FIP5	6G	O	L	H	Fluorescent tube digit signal output.
3	P92/FIP4	5G	O	L	H	Fluorescent tube digit signal output.
4	P91/FIP3	4G	O	L	H	Fluorescent tube digit signal output.
5	P90/FIP2	3G	O	L	H	Fluorescent tube digit signal output.
6	P81/FIP1	2G	O	L	H	Fluorescent tube digit signal output.
7	P80/FIP0	1G	O	L	H	Fluorescent tube digit signal output.
8	V_{DD}	5V	–	–	–	+5V.
9	P27/$\overline{\text{SCK0}}$	SBCLK	O	L	H	DENON BUS clock.
10	P26/SO0/SB1	TXD0	O	L	H	DENON BUS data output.
11	P25/F10/SB0	RXD	I	L	H	DENON BUS data input.
12	P24/BUSY	$\overline{\text{RDS Reset}}$	O	L	L	LC7070 reset output.
13	P23/STBY	PLLCE	O	H	H	PLL serial data selection output.
14	P22/SCK1	C Clock	I/O	H	–	RDS data fetch clock input and PLL control clock output.
15	P21/SO1	PLL Data	O	H	–	PLL serial data output.
16	P20/SI1	RDS Data	I	H	–	RDS serial data input.
17	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I	H	H	Reset.
18	P74	PLLSTRQ	O	L	L	IF count operation request output.
19	P73	$\overline{\text{Signal In}}$	I	H	L	RF signal detection signal input.
20	AVss	GND	–	–	–	A/D converter ground.
21	P17/ANI7	Tuned In	I	H	–	FM/AM sync signal input.
22	P16/ANI6	NC	I	H	–	V_{DD} connection.
23	P15/ANI5	NC	I	H	–	V_{DD} connection.
24	P14/ANI4	NC	I	H	–	V_{DD} connection.
25	P13/ANI3	NC	I	H	–	V_{DD} connection.
26	P12/ANI2	NC	I	H	–	V_{DD} connection.
27	P11/ANI1	ANI1	I	–	–	Key input *1.
28	P10/ANI0	ANI0	I	–	–	Key input *2.
29	AV_{DD}	AV_{DD}	–	–	–	Analog 5V (Common power supply with V_{DD} as a measure against leakage).
30	AV_{REF}	AV_{REF}	–	–	–	+5V (A/D converter reference voltage).
31	P04/XT1	XT1	I	–	–	32.7 kHz (Xtal input oscillator for the clock).
32	XT2	XT2	O	–	–	32.7 kHz (Xtal output oscillator for the clock).
33	Vss	Vss	–	–	–	Digital ground.
34	X1	OSCI	I	–	–	4.19 Mhz (Xtal input).
35	X2	OSCO	O	–	–	4.19 Mhz (Xtal output).
36	P37	$\overline{\text{Power On}}$	O	H	H	Power on/off switching.
37	P36/BUZ	NC	O	L	L	Open.
38	P35/PCL	XTP	O	–	–	Xtal oscillator output (for frequency adjustments).
39	P34/T12	NC	O	L	L	Open.
40	P33/TI1	50/60	I	–	–	AC power supply frequency (50/60 Hz) detection.
41	P32/TO2	Local/$\overline{\text{DX}}$	O	L	–	RF signal strengh control signal output.
42	P31/TO1	AUTO/MONO	O	L	–	Stereo (Auto)/Mono switching
43	P30/TO0	NC	O	L	L	Open
44	P03/INTP3/CI0	$\overline{\text{RDS Start}}$	I	H	L	RDS signal start detection.
45	P02/INTP2	NC	O	L	L	Open
46	P01/INTP1	$\overline{\text{RXD}}$	I	H	H	DENON BUS data signal iinput (Transfer start request detection).
47	P00/INTP0/TI0	$\overline{\text{REMOCON}}$	I	–	–	Remove control received data input.
48	IC (Vpp)	$\overline{\text{Vpp}}$	–	–	–	Ground (Set to 5V when PROM program is used).
49	P72	$\overline{\text{AM Stereo}}$	I	H	L	AM stereo signal detection.
50	P71	$\overline{\text{Stop In}}$	I	H	L	IF count sync detection.
51	P70	Stereo In	I	H	L	FM stereo recovery detection.
52	V_{DD}	$\overline{\text{VDD}}$	–	–	–	5V.
53	P127/FIP33	Muto Out	O	L	L	Mute output.
54	P126/FIP32	NC	O	L	L	Open.
55	P125/FIP31	NC	O	L	L	Open.
56	P124/FIP30	NC	O	L	L	Open.
57	P123/FIP29	NC	O	L	L	Open.
58	P122/FIP28	Diode In	I	–	L	AM STEREO, EX, RDS, and ADJUST functions selection switch (diode) state detection.
59	P121/FIP27	Jumper	I	–	H	Destination [Switch (diode) and frequency] state detection.
60	P120/FIP26	Seg16	O	L	L	Segment 16 output.
61	P117/FIP25	Seg15	O	L	L	Segment 15 output.
62	P116/FIP24	Seg14	O	L	L	Segment 14 output.
63	P115/FIP23	Seg13	O	L	L	Segment 13 output.
64	P114/FIP22	Seg12	O	L	L	Segment 12 output.
65	P113/FIP21	Seg11	O	L	L	Segment 11 output.
66	P112/FIP20	Seg10	O	L	L	Segment 10 output.
67	P111/FIP19	Seg9	O	L	L	Segment 9 output.
68	P110/FIP18	Seg8	O	L	L	Segmen 8 output.
69	P107/FIP17	Seg7	O	L	L	Segment 7 output.1
70	P106/FIP16	Seg6	O	L	L	Segment 6 output.
71	V_{LOAD}	V_{LOAD}	–	–	–	– High B.
72	P105/FIP15	Seg5	O	L	L	Fluorescent tube digit signal output.
73	P104/FIP14	Seg4	O	L	L	Fluorescent tube digit signal output.
74	P103/FIP13	Seg3	O	L	L	Fluorescent tube digit signal output.
75	P102/FIP12	Seg2	O	L	L	Fluorescent tube digit signal output.
76	P101/FIP11	Seg1	O	L	L	Fluorescent tube digit signal output.
77	P100/FIP10	11G	O	L	L	Fluorescent tube digit signal output.
78	P97/FIP9	10G	O	L	L	Fluorescent tube digit signal output.
79	P96/FIP8	9G	O	L	L	Fluorescent tube digit signal output.
80	P95/FIP7	8G	O	L	L	Fluorescent tube digit signal output.

*1: Each of the following buttons .... POWER, CLOCK/DISPLAY, TIMER, BAND, MONO/STEREO, and TUNING up/down.
*2 Each of the following buttons .... PRESET up/down, PANEL, CT, PTY, RDS, MEMO, and DIMMER.

TUNER SECTION

PRINTED WIRING BOARD

1 2 3 4 5 6 7 8

TUNER UNIT ASS'Y

Component Side

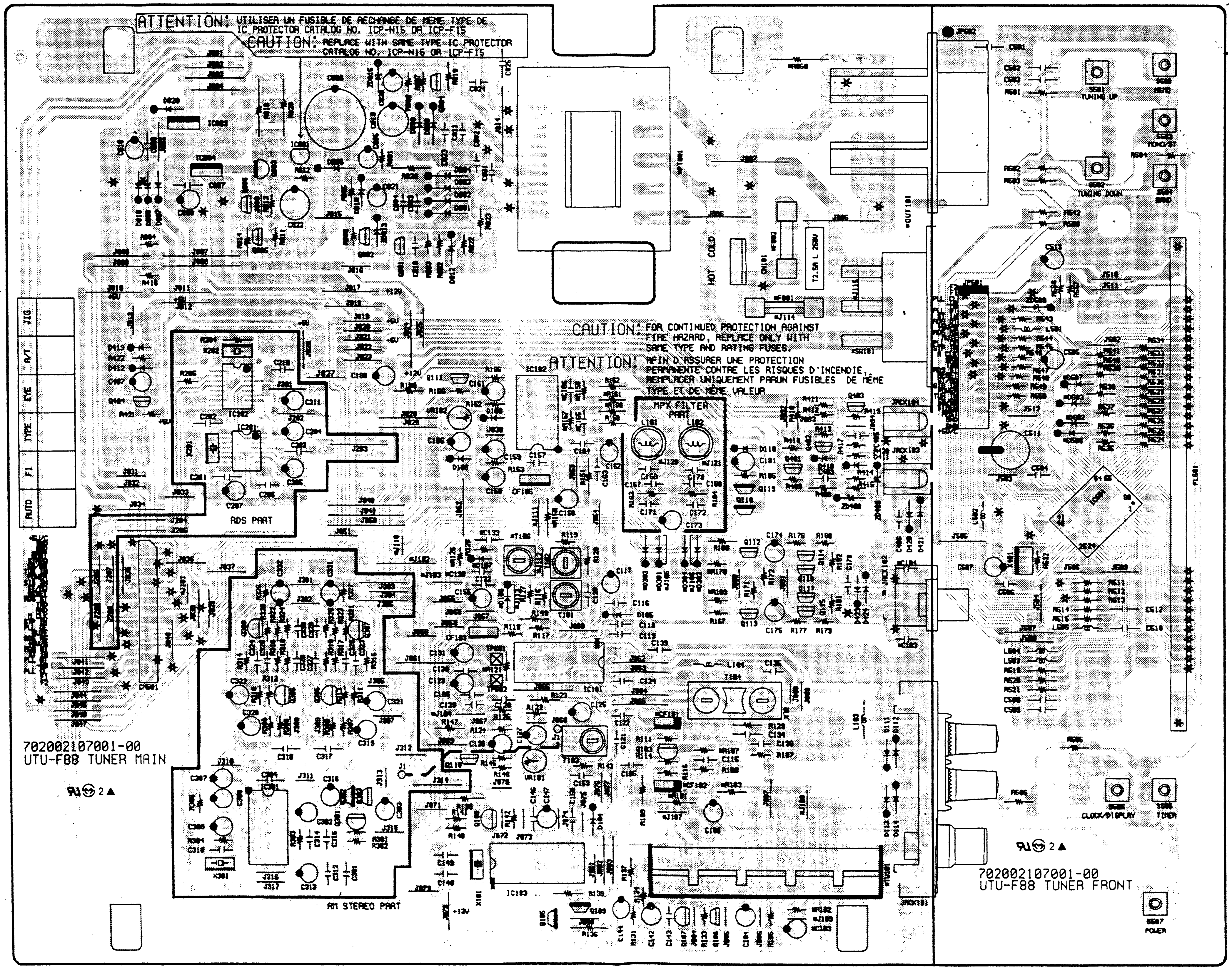
A

B

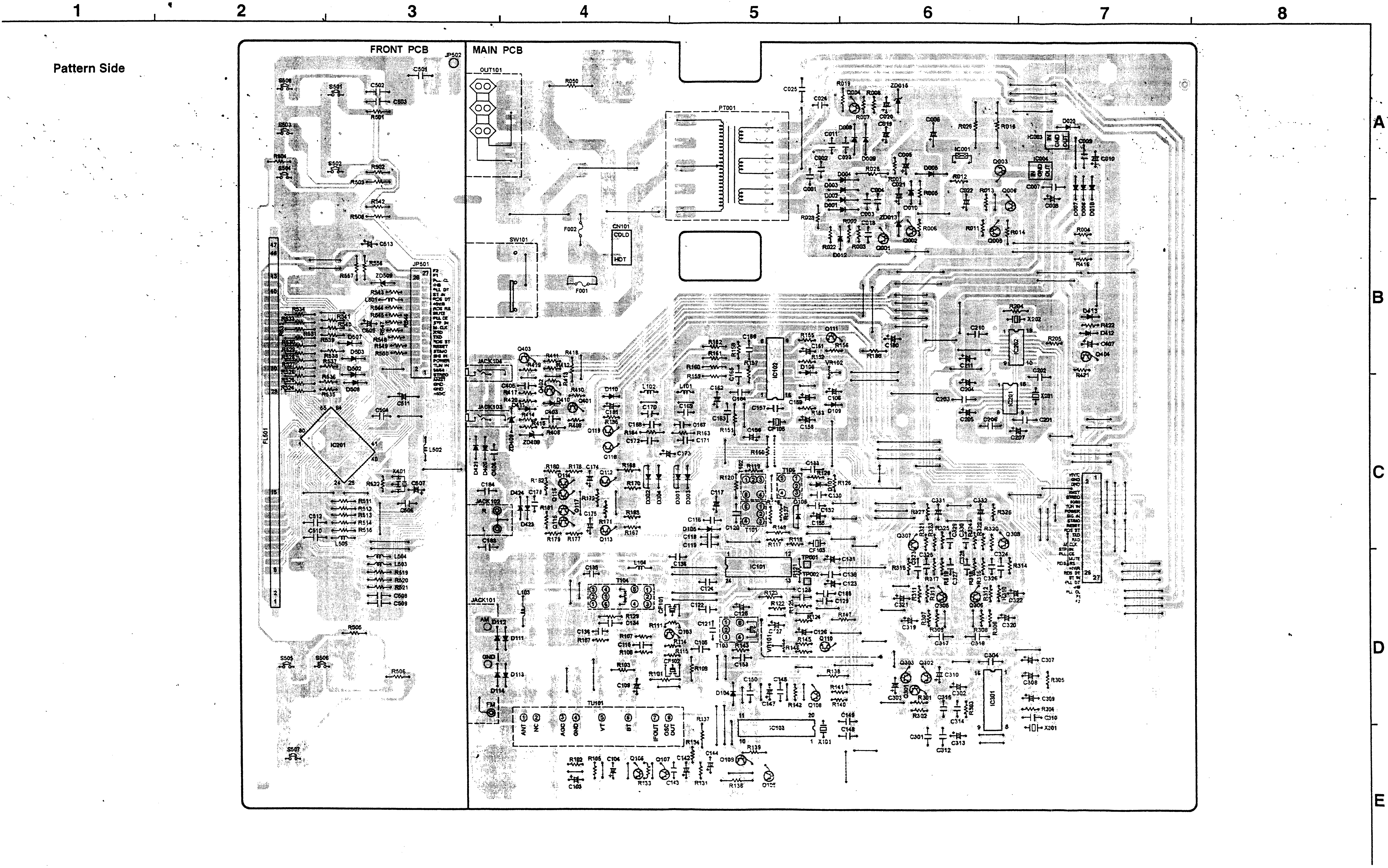
C

D

E


ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE IC PROTECTOR CATALOG NO. ICP-N15 OR ICP-F15
CAUTION: REPLACE WITH SAME TYPE IC PROTECTOR CATALOG NO. ICP-N15 OR ICP-F15
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATING FUSES.
ATTENTION: AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PARUN FUSIBLES DE MEME TYPE ET DE MEME VALEUR
JIG
A/T
EYE
TYPE
F1
AUTO
RDS PART
MPX FILTER PART
FM STEREO PART
HOT
COLD
T2.5A L 250V
TUNING UP
MONO/ST
TUNING DOWN
BAND
MEMO
CLOCK/DISPLAY
TIMER
POWER
702002107001-00
UTU-F88 TUNER MAIN
702002107001-00
UTU-F88 TUNER FRONT

Pattern Side


1
2
3
4
5
6
7
8
A
B
C
D
E
FRONT PCB
MAIN PCB
OUT101
PT001
SW101
CN101
F001
F002
IC201
FL501
JP501
JP502
X401
JACK104
JACK103
JACK102
JACK101
TU101
IC101
IC102
IC103
IC001
IC201
IC202
IC301
AM
GND
FM
ANT
NC
AGC
GND
VT
BT
IFOUT
OSC OUT

TUNER SECTION

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

Resistors

Ex.: RN 14K 2E 182 G FR
RN: Type
14K: Shape and performance
2E: Power
182: Resistance
G: Allowable error
FR: Others

Type	Power	Allowable error	Others
RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

＊ Resistance

1 8 2 ⇒ 1800 ohm = 1.8 kohm
2 — Indicates number of zeros after effective number.
1 8 — 2-digit effective number.
- Units: ohm

1 R 2 ⇒ 1.2 ohm
2 — 1-digit effective number.
1 R — 2-digit effective number, decimal point indicated by R.
- Units: ohm

Capacitors

Ex.: CE 04W 1H 2R2 M BP
CE: Type
04W: Shape and performance
1H: Dielectric strength
2R2: Capacity
M: Allowable error
BP: Others

Type	Dielectric strength	Allowable error	Others
CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For change and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80% −20%	U : UL part
CP : Oil	2A : 100V	P : +100% −0%	C : CSA part
CM : Mica	2B : 125V	C : ±0.25pF	W : UL-CSA type
CF : Metallized	2C : 160V	D : ±0.5pF	F : Lead wire forming
CH : Metallized	2D : 200V	= : Others	
	2E : 250V		
	2H : 500V		
	2J : 630V		

＊ Capacity (electrolyte only)

2 2 2 ⇒ 2200µF
2 — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.
- Units: µF.

2 R 2 ⇒ 2.2µF
2 — 1-digit effective number.
2 R — 2-digit effective number, decimal point indicated by R.
- Units: µF.

＊ Capacity (except electrolyte)

2 2 2 ⇒ 2200pF=0.0022µF
2 — (More than 2) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.
- Units: µF.

2 2 1 ⇒ 220pF
1 — (0 or 1) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.
- Units: pF.

- When the dielectric strength is indicated in AC, "AC" is included after the dieelectric strength value.

P.W.B. UNIT ASS'Y PARTS LIST

TUNER UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS			
⚠IC001	268 0073 905	IC ICP-N15	IC protector
⚠IC003	263 0567 005	IC NJM78M05FA	Regulator +5V
⚠IC004	960 0008 607	IC KIA7812A	Regulator +12V
or	—	IC JRC7812	Regulator +12V
IC101	263 0421 002	IC LA1267S	Linear RF
IC102	263 0584 004	IC LA3410	Linear RF
IC103	262 0703 002	IC LM7000	Linear IC
IC201	262 1827 000	IC SAA6579T	Demodulator Europe model only
IC202	262 1929 908	IC LC7074NM-TE-R	CPU microprocessor Europe model only
IC301		IC TA2040AP	
IC501	960 0007 006	IC µPD78044AGF-057-3B9	CPU microprocessor
Q001,002	273 0178 022	Transistor 2SC1740S(R)	
Q003	271 0110 000	Transistor KSA916(Y)	
Q004	271 0192 002	Transistor 2SA933S(S)	
Q005,006	273 0178 022	Transistor 2SC1740S(R)	
Q103	960 0008 801	Transistor KTC3194(O)	
Q105	269 0046 003	Transistor DTA114ES	Built in resistor
Q106	273 0178 022	Transistor 2SC1740S(R)	
Q107	273 0207 003	Transistor KSC1845(F)	
Q108	960 0008 801	Transistor KTC3194(O)	
Q109	269 0046 003	Transistor DTA114ES	Built in resistor
Q110	273 0178 022	Transistor 2SC1740S(R)	
Q111	273 0178 022	Transistor 2SC1740S(R)	
Q112,113	273 0178 022	Transistor 2SC1740S(R)	
Q114~117	269 0146 903	Transistor DTC343TS	Built in resistor
Q118,119	269 0046 003	Transistor DTA114ES	Built in resistor
Q301		Tramsistor KTC3198Y	
Q302	269 0046003	Transistor DTA114ES	
Q303	269 0040 902	Transistor DTC144ES	
Q305~308		Transistor KTC3198Y	
Q401	273 0178 022	Transistor 2SC1740S(R)	
Q402,403	271 0192 002	Transistor 2SA933S(S)	
Q404	269 0040 009	Transistor DTC144ES	Built in resistor
⚠D001~005	916 0053 008	Diode 1N4002A	Rectifier
D006,007	960 0031 409	Diode 1SS131	
D008,009	916 0053 008	Diode 1N4002A	
D010	960 0031 409	Diode 1SS131	
D012	960 0031 409	Diode 1SS131	
D018	960 0031 409	Diode 1SS131	
D020	960 0031 409	Diode 1SS131	
D104,105	960 0031 409	Diode 1SS131	
D106~110	960 0031 409	Diode 1SS131	
D111~114	960 0031 409	Diode 1SS131	
D301~304	960 0031 409	Diode 1SS131	
D410~413	960 0031 409	Diode 1SS131	
D420,421	960 0031 409	Diode 1SS131	
D423,424	960 0031 409	Diode 1SS131	
D503	276 0401 002	Diode 1SS133	Europe model only
D507	276 0401 002	Diode 1SS133	
ZD013	276 0636 903	Zener diode MTZJ8.2B	8.2 V
ZD015	9H3 0000 231	Zener diode MTZJ27B	27 V
ZD408,409	9H3 0000 509	Zener diode MTZJ6.2B	6.2 V
ZD509	9H3 0000 509	Zener diode MTZJ6.2B	6.2 V
FL501	960 0007 103	F.L.D tube 11-BT-127GK	
RESISTORS			
VR101	211 6075 053	Semifixed resistor 47 kohm	Auto stop level
VR102	211 6075 066	Semifixed resistor 220 kohm	Separation
R001	241 2402 977	Carbon film 56 kohm 1/6W	RD14B2E563J(5)
R002	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R003,004	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R005	241 2402 977	Carbon film 56 kohm 1/6W	RD14B2E563J(5)
R006	241 2318 003	Carbon film 3.9 kohm 1/6W	RD14B2E392F ±1%
R007	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5)
R008	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R011	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R012	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5)
R013	241 2399 954	Carbon film 2.7 kohm 1/6W	RD14B2E272J(5)
R014	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
⚠R016	244 0031 006	Metal oxide 150 ohm 1W(NB)	RS14B3A151JNB
R019	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R022	241 2401 965	Carbon film 20 kohm 1/6W	RD14B2E203J(5)
R023	241 2402 919	Carbon film 33 kohm 1/6W	RD14B2E333J(5)
⚠R026	244 0031 006	Metal oxide 150 ohm 1W(NB)	RS14B3A151JNB
⚠R028	960 9001 809	Fusible 1 ohm 1/4W (FR)	RD14B2E010JFRF
⚠R101	241 2313 008	Fusible 100 ohm 1/4W (FR)	RD14B2E101GFRF
R102	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5) Europe model only
R103	241 2400 995	Carbon film 10 kohm 1/6 W	RD14B2E103J(5) Europe model only

Ref. No.	Part No.	Part Name	Remarks
R105	241 2397 901	Carbon film 220 ohm 1/6W	RD14B2E221J(5)
R107	241 2394 069	Carbon film 22 ohm 1/6W	RD14B2E220J(5) Europe model
R107	241 2395 068	Carbon film 56 ohm 1/6W	RD14B2E560J(5) Asia model
R108	241 2397 943	Carbon film 330 ohm 1/6W	RD14B2E331J(5)
R109	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R111	241 2397 943	Carbon film 330 ohm 1/6W	RD14B2E331J(5)
R114	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R115	241 2398 010	Carbon film 680 ohm 1/6W	RD14B2E681J(5)
R116,117	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R118	241 2396 009	Carbon film 82 ohm 1/6W	RD14B2E820J(5)
R119	241 2397 082	Carbon film 5.1 kohm 1/6W	RD14B2E512J(5)
R120	241 2397 972	Carbon film 470 ohm 1/6W	RD14B2E471J(5)
R121	241 2402 016	Carbon film 30 kohm 1/6W	RD14B2E303J(5) Europe model
R121	241 2401 936	Carbon film 15 kohm 1/6W	RD14B2E153J(5) Asia model
R122~124	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R125	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R126	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R127	241 2399 954	Carbon film 2.7 kohm 1/6W	RD14B2E272J(5)
R128	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R129	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R131	241 2400 979	Carbon film 8.2 kohm 1/6W	RD14B2E822J(5)
R133	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R134	241 2399 912	Carbon film 1.8 kohm 1/6W	RD14B2E182J(5)
⚠R136	241 2313 008	Fusible 100 ohm 1/4W (FR)	RD14B2E101GFRF
R137	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
⚠R138	241 2315 019	Fusible 10 ohm 1/4W (FR)	RD14B2E100GFRF
R139	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R140	241 2403 073	Carbon film 150 kohm 1/6W	RD14B2E154J(5)
R141,142	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R143	241 2402 993	Carbon film 68 kohm 1/6W	RD14B2E683J(5)
R145	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R146	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R147	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R149	241 2400 034	Carbon film 5.6 kohm 1/6W	RD14B2E562J(5)
R150	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5) Europe model only
⚠R151	241 2313 008	Fusible 100 ohm 1/4W (FR)	RD14B2E101GFRF
R152	241 2399 938	Carbon film 2.2 kohm 1/6W	RD14B2E222J(5)
R153	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R155	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R156	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R157,158	241 2403 099	Carbon film 180 kohm 1/6W	RD14B2E184J(5) Europe model
R157,158	241 2403 950	Carbon film 120 kohm 1/6W	RD14B2E124J(5) Asia model
R159	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)

Ref. No.	Part No.	Part Name	Remarks
R160,161	241 2404 001	Carbon film 200 kohm 1/6W	RD14B2E204J(5) Europe model
R160,161	241 2403 950	Carbon film 120 kohm 1/6W	RD14B2E124J(5) Asia model
R162	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R163,164	241 2401 017	Carbon film 12 kohm 1/6W	RD14B2E123J(5) Europe model only
R167,168	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R169,170	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R171,172	241 2400 034	Carbon film 5.6 kohm 1/6W	RD14B2E562J(5)
R177~180	241 2397 972	Carbon film 470 ohm 1/6W	RD14B2E471J(5)
R181,182	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R185	241 2400 034	Carbon film 5.6 kohm 1/6W	RD14B2E562J(5)
R187	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R188	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R204	241 2405 974	Carbon film 1 Mohm 1/6W	RD14B2E105J(5) Europe model only
R205	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5) Europe model only
R408,409	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R410,411	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R412,413	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R414	241 2397 901	Carbon film 220 ohm 1/6W	RD14B2E221J(5)
R415,416	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R417	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R418	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R419	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R420	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R421	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R422	241 2405 974	Carbon film 1 Mohm 1/6W	RD14B2E105J(5)
R501,502	241 2396 960	Carbon film 150 ohm 1/6W	RD14B2E151J(5)
R503	241 2396 083	Carbon film 180 ohm 1/6W	RD14B2E181J(5)
R504	241 2397 927	Carbon film 270 ohm 1/6W	RD14B2E271J(5)
R505	241 2397 066	Carbon film 390 ohm 1/6W	RD14B2E391J(5)
R506	241 2398 010	Carbon film 680 ohm 1/6W	RD14B2E681J(5)
R508	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R511~515	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R519~521	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R522	241 2405 974	Carbon film 1 Mohm 1/6W	RD14B2E105J(5)
R524~541	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R542~550	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R556,557	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)

CAPACITORS

⚠C001~004	960 9001 100	Ceramic cap. 0.01 µF/500V	CK45F2H103Z
C005	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C006	254 4256 091	Electrolytic 2200 µF/25V	CE04W1E222MC
C007	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C008	254 4254 048	Electrolytic 100 µF/16V	CE04W1C100M

TUNER SECTION

Ref. No.	Part No.	Part Name	Remarks
C009	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C010	254 4254 048	Electrolytic 100 µF/16V	CE04W1C100M
⚠C011	960 9001 207	Ceramic cap. 0.022 µF/500V	CK45F2H223Z
C018	253 1027 000	Ceramic cap. 0.1 µF/50V	CK45F1H104Z
C019	254 4261 028	Electrolytic 100 µF/50V	CE04W1H101M
C020	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C021	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C022	254 4261 028	Electrolytic 100 µF/50V	CE04W1H101M
⚠C023	960 9001 100	Ceramic cap. 0.01 µF/500V	CK45F2H103Z
C024	253 1027 000	Ceramic cap. 0.1 µF/50V	CK45F1H104Z
C025	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C103	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M Europe model only
C104	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C105	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C106	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C107	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C109	254 4254 048	Electrolytic 100 µF/16V	CE04W1C100M
C115	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C116	253 9030 086	Ceramic cap. 0.022 µF/25V	CK45=1E223K
C117	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C118,119	253 9030 086	Ceramic cap. 0.022 µF/25V	CK45=1E223K
C120	253 4342 012	Ceramic cap. 10 pF/50V	CC45SL1H100C
C121	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C122	253 1055 069	Ceramic cap. 100 pF/50V	CK45B1H101K
C123	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C124	253 3611 003	Ceramic cap. 22 pF/50V	CC45SL1H220J
C125	254 4260 074	Electrolytic 4.7 µF/50V	CE04W1H4R7M
C126	254 4260 061	Electrolytic 3.3 µF/50V	CE04W1H3R3M
C127	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C128	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C129	255 1121 041	Film cap. 0.015 µF/50V	CQ93M1H153J
C130	253 1027 000	Ceramic cap. 0.1 µF/50V	CK45F1H104Z
C131	254 4260 061	Electrolytic 3.3 µF/50V	CE04W1H3R3M
C132	253 3615 009	Ceramic cap. 33 pF/50V	CC45SL1H330J
C133	253 1055 014	Ceramic cap. 560 pF/50V	CK45B1H561K Europe model only
C134	253 3607 004	Ceramic cap. 15 pF/50V	CC45SL1H150J
C135	253 3599 002	Ceramic cap. 6 pF/50V	CC45SL1H060D
C136	253 1026 001	Ceramic cap. 0.047 µF/50V	CK45F1H473Z
C138	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C139	253 9030 086	Ceramic 0.02 µF/25V	CK45=1E223K
C142	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C143	255 1121 078	Film cap. 0.027 µF/50V	CQ93M1H273J
C144	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M
C146	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C147	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M
C148,149	253 3611 008	Ceramic cap. 22 pF/50V	CC45SL1H220J
C150	253 1055 069	Ceramic cap. 100 pF/50V	CK45B1H101K
C153	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C155	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M

Ref. No.	Part No.	Part Name	Remarks
C156	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C157	255 4224 903	Film cap. 0.047 µF/50V	CQ92M1H473J(MRZ)
C158	254 4260 061	Electrolytic 3.3 µF/50V	CE04W1H3R3M
C159	254 3056 001	Electrolytic 0.47 µF/50V(Bipolar)	CE04D1HR47MBP
C161	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C162	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M
C163	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C164	253 1001 000	Ceramic cap. 330 pF/50V	CK45B1H331K
C165,166	253 1055 001	Ceramic cap. 270 pF/50V	CK45B1H271K Europe model
C165,166	253 1002 009	Ceramic cap. 470 pF/50V	CK45B1H471K Asia model
C167,168	253 1173 941	Ceramic cap. 2700 pF/16V	CK14X1C272K Europe model only
C169,170	255 1264 953	Filmcap 2700 pF/50V	CQ93M1H272J Europe model only
C171,172	253 1173 909	Ceramic cap. 1200 pF/16V	CK14X1C122M Europe model only
C173	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M Europe model only
C174,175	254 4260 058	Electrolytic 2.2 µF/50V	CE04W1H2R2M
C178	253 1010 004	Ceramic cap. 0.01 µF/50V	CK45B1H103K
C180	254 4254 048	Electrolytic 100 µF/16V	CE04W1C100M
C181	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M
C183,184	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K Europe model only
C185	253 1055 069	Ceramic cap. 100 pF/50V	CK45B1H101K
C201,202	253 3613 001	Ceramic cap. 27 pF/50V	CC45SL1H270J Europe model only
C203	253 1055 069	Ceramic cap. 100 pF/50V	CK45B1H101K Europe model only
C204	254 4260 058	Electrolytic 2.2 µF/50V	CE04W1H2R2M Europe model only
C205	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M Europe model only
C206	253 1055 014	Ceramic cap. 560 pF/50V	CK45B1H561K Europe model only
C207	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M Europe model only
C210	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M Europe model only
C211	254 4254 035	Electrolytic 47 µF/16V	CE04W1C470M Europe model only
C301	253 1174 018	Ceramic 0.01 µF/16V	CK14Y1C103M
C303	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C304	253 9030 086	Ceramic 0.022 µF/25V	CK45=1E223K
C307	254 4260 919	Electrolytic 0.22 µF/50V	CE04W1HR22M
C308	254 4260 074	Electrolytic 4.7 µF/50V	CE04W1H4R7M
C309	254 4254 048	Electrolytic 100 µF/10V	CE04W1A101M
C310	253 1174 018	Ceramic 0.01 µF/16V	CK14Y1C103M

Ref. No.	Part No.	Part Name	Remarks
C312	253 1174 018	Ceramic 0.01 µF/16V	CK14Y1C103M
C313	254 4260 087	Electrolytic 10 µF/50V	CE04W1H100M (ASF)
C314, 315	256 1064 979	Metalized 0.1 µF/50V	CF93A1H104J
C316	254 4260 074	Electrolytic 4.7 µF/50V	CE04W1H4R7M
C317,318	253 1174 018	Ceramic 0.01 µF/16V	CK14Y1C103M
C319~322	254 4260 903	Electrolytic 0.1 µF/50V	CE04W1H0R1M
C323,324		Ceramic 2200 pF/16V	CK14Y1C222M
C325,326	255 1120 097	Mylar film 5600 pF/50V	CQ93M1H562J
C327~330	255 1120 055	Mylar film 2700 pF/50V	CQ93M1H272J
C331,332	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M
C403	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C405	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C406	253 1010 004	Ceramic cap. 0.01 µF/50V	CK45B1H103K
C407	254 4260 074	Electrolytic 4.7 µF/50V	CE04W1H4R7M
C501	253 9030 086	Ceramic cap. 0.022 µF/25V	CK45=1E223K
C502,503	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C504	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C505	254 4252 037	Electrolytic 100 µF/10V	CE04W1A101M
C506	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C507	254 4252 037	Electrolytic 100 µF/10V	CE04W1A101M
C508~510	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C511	960 9001 003	Super cap. 0.047 F/5.5V	for back-up
C512	253 1174 018	Ceramic cap. 0.01 µF/16V	CK14Y1C103M
C513	254 4258 015	Electrolytic 10 µF/35V	CE04W1V100M

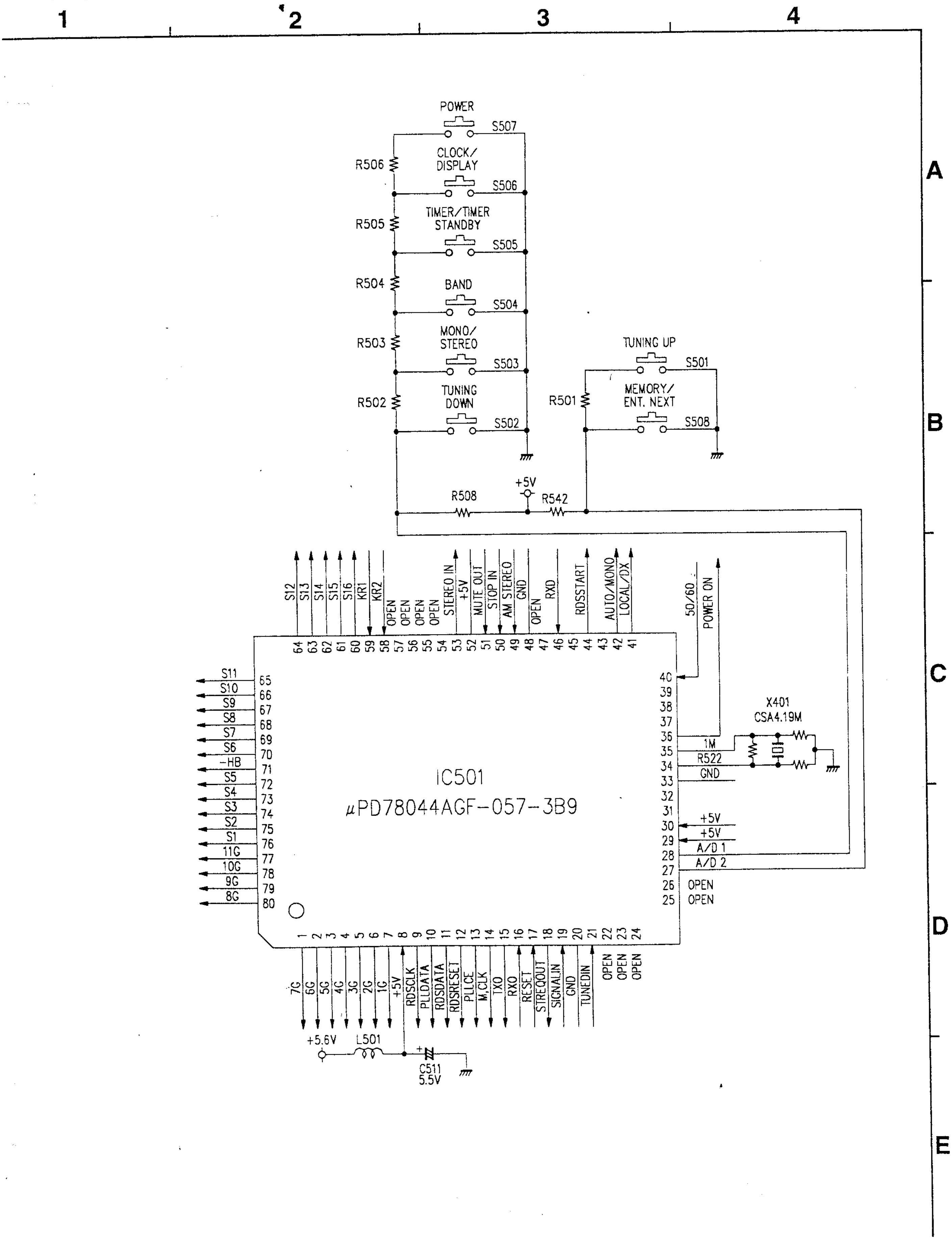
OTHER PARTS				Q'ty
		(P.W.board)		(1)
L101,102	960 0007 310	Inductor 39 µH	D33039300052 Europe model only	2
L103	960 0007 307	Inductor 1 µH	D3301R070000	1
L104	960 0010 307	Inductor 10 µH	D33010070052	1
L501~505	960 0007 307	Inductor 1 µH	D3301R070000	5
T101	960 0007 349	FM IF coil	D95156110000	1
T102	960 0007 352	FM IF coil	D95156120000	1
T103	960 0007 323	MW IF coil	D95050020000	1
T104	960 0007 336	MW IF coil Black	D95050050000	1
T106	960 0037 607	Anti birdie filter	E40312683241 Europe model only	1
CF101,102	261 0120 006	FM ceramic filter	SFE10.7MS3GK-A Europe model	2
CF101,102	960 0043 400	FM ceramic filter	SFE10.7MA5 Asia model	2
CF103	940 0425 202	AM ceramic filter	BFU450C4N	1
CF105	261 0079 005	Ceramic resonator	CSB456F11	1
X101	960 0008 005	Crystal 7.2 MHz	E8007R200003	1
X201	960 0037 704	Crystal 4.332 MHz	E8004R332001 Europe model only	1

Ref. No.	Part No.	Part Name	Remarks	Q'ty
X202	399 9018 003	Ceramic resonator CST4.00MGW	E83049000001 Europe model only	1
X301	399 0189 009	Ceramic resonator	CSA3.60MGF	
X401	399 0107 007	Ceramic resonator CST4.19MGW	E8304R100000	1
TU101	960 0037 319	FM tuner pack (FE415-G11)	E90000011000 Europe model	1
TU101	960 0037 306	FM tuner pack (FTH3-504VA)	E90000019000 Asia model	1
S501~508	DCD 2150 426	Tact switch	G18000027000	8
JACK101	960 0008 209	4 P Ant. terminal	G04010580000	1
JACK102	960 0008 403	2 P pin jack	G60102004400	1
JACK103, 104	960 0004 407	Mini jack f3.5	G40103110201	2
⚠OUT101	960 0037 500	AC outlet (3 gang)	G43500003002	1
⚠PT001	960 0034 600	Power transformer	820048040001 Europe model	1
⚠PT001	960 0034 202	Power transformer	820048040003 Asia model	1
⚠F002	960 0037 102	Fuse T2.5A/250V	G65025225103	1
	960 0005 804	Fuse holder	for F002 G64500005001	2
	—	Fuse label	for F002	1
⚠SW101	960 0037 403	Slide switch	G06000100001 Asia model only	1
⚠CN101	—	2P connector base	L10803960201	1
CN501	—	27P FP cable	L13152045270	1
JP501	960 0006 201	27P FP cable L=120 mm	L30112127000	1
JP501	960 0037 908	27P FP cable	L13152044270	1
JP502	—	Vinyl wire Black L=120 mm	841012126000	1
TP001,002	—	Test pin	L421000010000	2
	960 0036 909	Terminal	379000012000	4
	—	Earth plate	447000393000 Asia model	1
	—	Earth plate	447000528601 Europe model	1
	960 0007 200	FLD holder	432002015601	1
J001~015	—	Jumper wire	L40200002002	15
J017.018	—	Jumper wire	L40200002002	2
J101~103	—	Jumper wire	L40200002002	3
J106~111	—	Jumper wire	L40200002002	6
J114~124	—	Jumper wire	L40200002002	11
J126~134	—	Jumper wire	L40200002002	9
J136~140	—	Jumper wire	L40200002002	5
J142~144	—	Jumper wire	L40200002002	3
J149	—	Jumper wire	L40200002002	1
J151~169	—	Jumper wire	L40200002002	19

TUNER SECTION

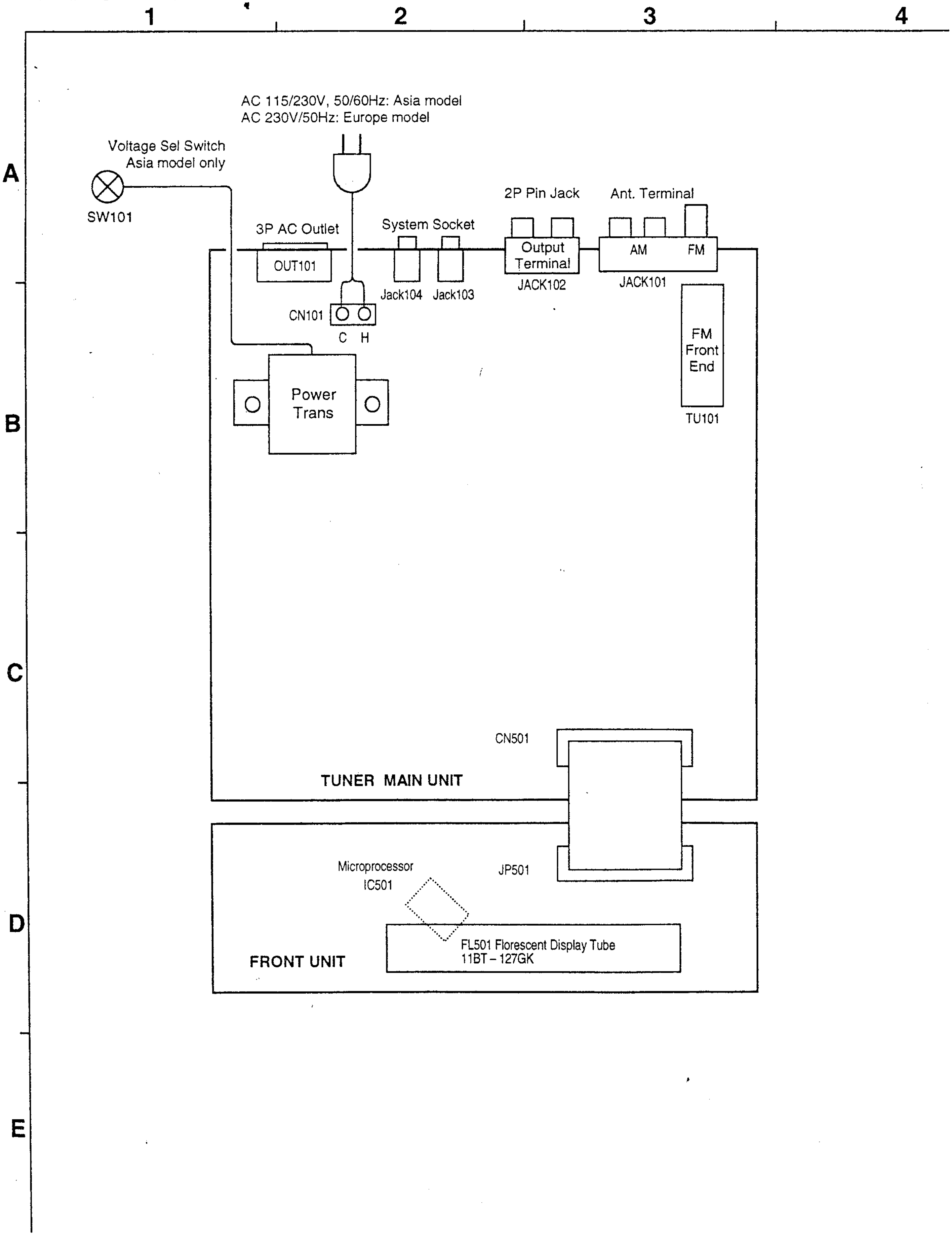
Ref. No.	Part No.	Part Name	Remarks	Q'ty
J171	—	Jumper wire	L40200002002	1
J173~175	—	Jumper wire	L40200002002	3
J177~189	—	Jumper wire	L40200002002	13
J191	—	Jumper wire	L40200002002	1
J200~210	—	Jumper wire	L40200002002	11
J218~224	—	Jumper wire	L40200002002	7
J402,403	—	Jumper wire	L40200002002	2
J502~511	—	Jumper wire	L40200002002	10
J601~603	—	Jumper wire	L40200002002	3
J804~806	—	Jumper wire	L40200002002	3

MICROPROCESSOR PERIPHERAL WIRING DIAGRAM


1
2
3
4
A
B
C
D
E
POWER
S507
CLOCK/
DISPLAY
S506
R506
TIMER/TIMER
STANDBY
S505
R505
BAND
S504
R504
MONO/
STEREO
S503
R503
TUNING
DOWN
S502
R502
TUNING UP
S501
MEMORY/
ENT. NEXT
S508
R501
+5V
R508
R542
S12
S13
S14
S15
S16
KR1
KR2
OPEN
OPEN
OPEN
OPEN
STEREO IN
+5V
MUTE OUT
STOP IN
AM STEREO
GND
OPEN
RXD
RDSSTART
AUTO/MONO
LOCAL/DX
50/60
POWER ON
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
S11
S10
S9
S8
S7
S6
-HB
S5
S4
S3
S2
S1
11G
10G
9G
8G
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
1M
R522
GND
+5V
+5V
A/D 1
A/D 2
OPEN
OPEN
X401
CSA4.19M
IC501
µPD78044AGF-057-3B9
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
7G
6G
5G
4G
3G
2G
1G
+5V
RDSCLK
PLLDATA
RDSDATA
RDSRESET
PLLCE
M,CLK
TXO
RXO
RESET
STREQOUT
SIGNALIN
GND
TUNEDIN
OPEN
OPEN
OPEN
+5.6V
L501
C511
5.5V

TUNER SECTION

WIRING DIAGRAM


1
2
3
4
A
B
C
D
E
AC 115/230V, 50/60Hz: Asia model
AC 230V/50Hz: Europe model
Voltage Sel Switch
Asia model only
SW101
3P AC Outlet
OUT101
System Socket
Jack104
Jack103
2P Pin Jack
Output Terminal
JACK102
Ant. Terminal
AM
FM
JACK101
CN101
C
H
Power Trans
FM Front End
TU101
CN501
TUNER MAIN UNIT
Microprocessor
IC501
JP501
FL501 Florescent Display Tube
11BT – 127GK
FRONT UNIT

Contrast list

〈MAIN PARTS〉

TITLE	Asia model	Europe model
R102	×	4.7 kohm
R103	×	10 kohm
R107	56 ohm	22 ohm
R121	15 kohm	30 kohm
R150	×	3.3 kohm
C103	×	10μF/50 V
C133	×	470 pF
C183	×	1000 pF
C184	×	1000 pF
CF101	SFE10.7MA5	SFE10.7MS3GK-A
CF102	SFE10.7MA5	SFE10.7MS3GK-A
T106	×	○
⚠ F001	×	×
⚠ F002	Fuse 2.5 A/250 V	Fuse 2.5 A/250 V
⚠ SW101	○	×
J109	○	×
J111	○	×
J112	○	×
J114	○	○
J115	×	○
TU101	960 0037 306	960 0037 319

〈DE-EMPHASIS PARTS〉

TITLE	Asia model	Europe model
R157	120 kohm	180 kohm
R158	120 kohm	180 kohm
R160	120 kohm	200 kohm
R161	120 kohm	200 kohm
C165	470 pF	270 pF
C166	470 pF	270 pF

〈MPX FILTER PARTS〉

TITLE	Asia model	Europe model
R163	×	12 kohm
R164	×	12 kohm
C167	×	2700 pF
C168	×	2700 pF
C169	×	1800 pF
C170	×	1800 pF
C171	×	1200 pF
C172	×	1200 pF
C173	×	47μF/16 V
L101	×	39 mH
L102	×	39 mH
J120	○	×
J121	○	×

〈RDS PARTS〉

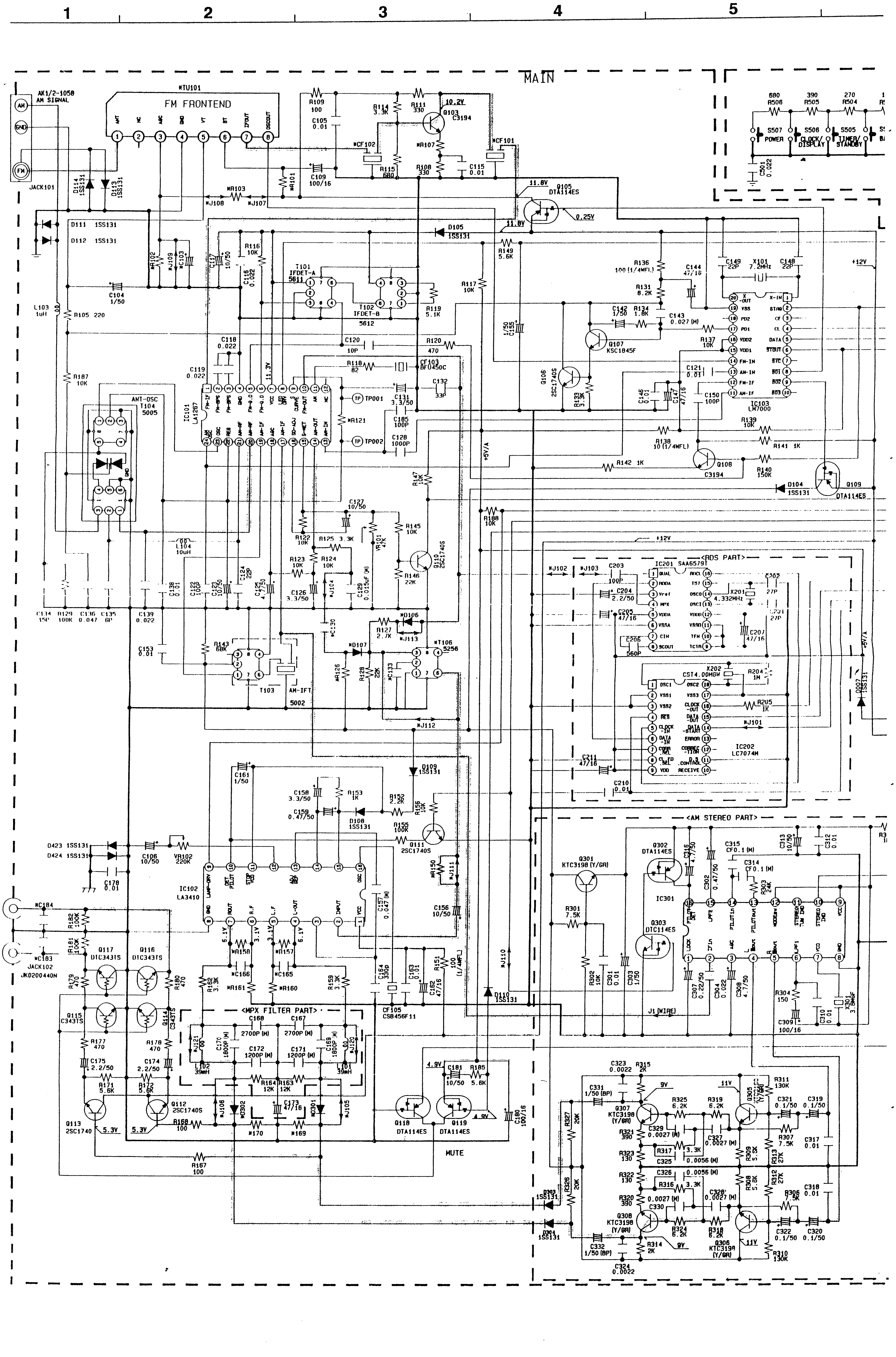
TITLE	Asia model	Europe model
IC201	×	SAA6579T
IC202	×	LC7074NM
R204	×	1 Mohm
R205	×	1 kohm
C201	×	27 pF
C202	×	27 pF
C203	×	100 pF
C204	×	2.2μF/50 V
C205	×	47μF/16 V
C206	×	560 pF
C207	×	47μF/16 V
C210	×	0.01 μF
C211	×	47μF/16 V
X201	×	Crystal 4.332 MHz
X202	×	Ceramic Resonator CST4.00MGW
J201,202	×	○

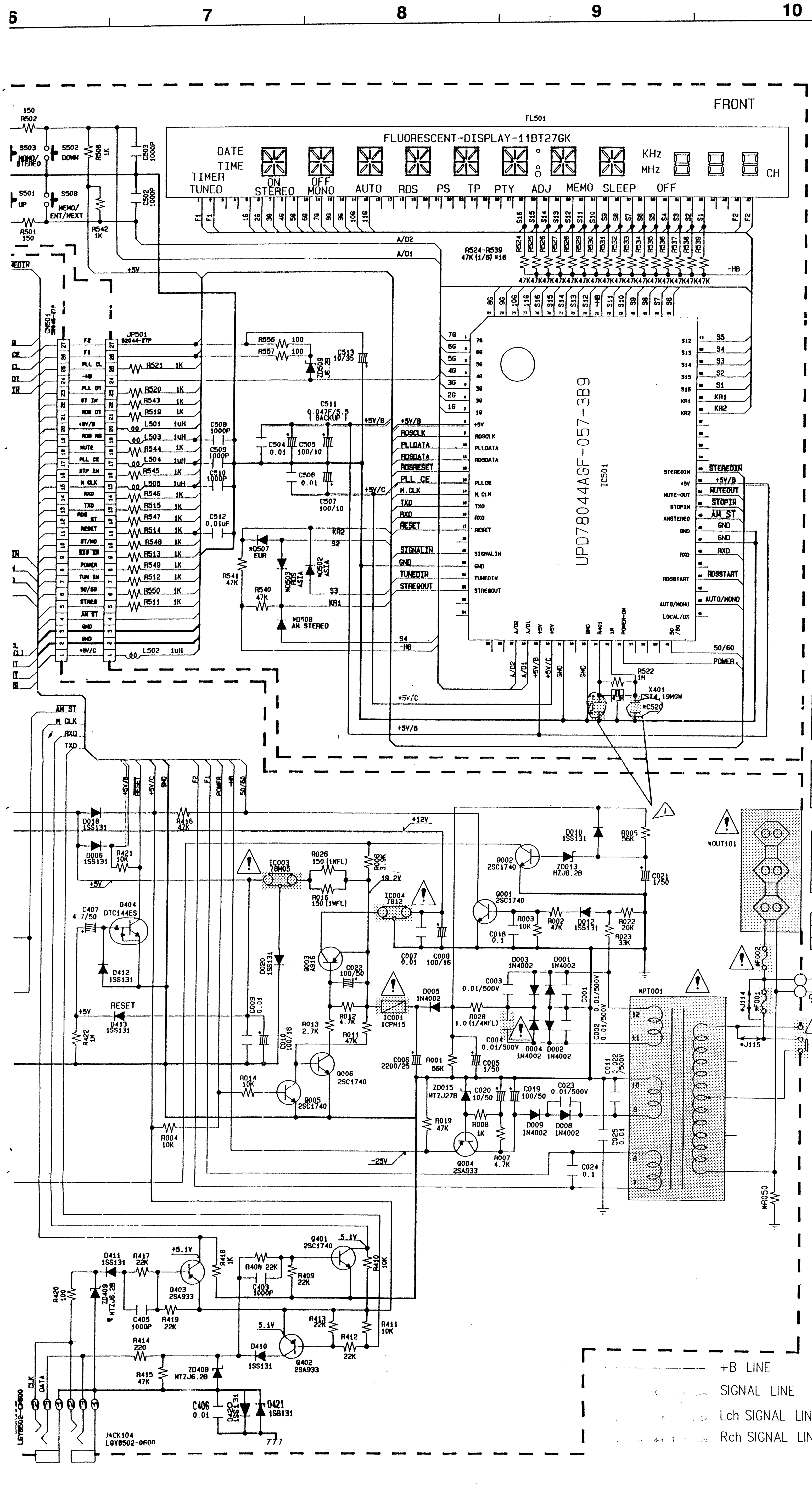
〈OPTION PARTS〉

TITLE	Asia model	Europe model
D502	×	×
D503	×	1SS133
⚠ PT001	960 0034 202	960 0034 600

NOTE

SCHEMATIC DIAGRAM


1
2
3
4
5
MAIN
AM1/2-1058 AM SIGNAL
AM
GND
FM
JACK101
※TU101
FM FRONTEND
ANT
NC
AGC
GND
VT
BT
IFOUT
OSCOUT
D114 1SS131
D113 1SS131
D111 1SS131
D112 1SS131
L103 1uH
R105 220
C104 1/50
R187 10K
ANT-OSC T104 5005
C114 15P
R129 100K
C136 0.047
C135 6P
C139 0.022
C138 0.01
C153 0.01
L104 10uH
R109 100
C105 0.01
R114 3.3K
R111 330
Q103 C3194
10.2V
※CF102
※CF101
※R107
R115 680
R108 330
C115 0.01
C109 100/16
※R101
※R103
※J108
※J107
11.8V
Q105 DTA114ES
0.25V
D105 1SS131
R149 5.6K
※R102
※J109
※C103
C117 10/50
R116 10K
C116 0.022
T101 IFDET-A 5611
T102 IFDET-B 5612
R119 5.1K
R117 10K
C118 0.022
C119 0.022
C120 10P
R120 470
R118 82
CF103 BFU450C
C131 3.3/50
C132 33P
C185 100P
C128 1000P
TP001
TP002
※R121
IC101 LA1267
11.3V
+5V/A
C155 1/50
R147 10K
C127 10/50
R145 10K
R122 10K
R125 3.3K
VR101 47K
R123 10K
R124 10K
R146 22K
Q110 2SC1740S
C122 100P
C123 10/50
C124 22P
C125 4.7/50
C126 3.3/50
※J114
C129 0.015uF (M)
※C130
R127 2.7K
※D106
※J113
※D107
※T106 5256
R143 68K
T103
AM-IFT 5002
※R126
R128 22K
※C133
R188 10K
※J112
R136 100 (1/4WFL)
R131 8.2K
C144 47/16
C149 22P
X101 7.2MHz
C148 22P
C142 1/50
R134 1.8K
C143 0.027 (M)
Q107 KSC1845F
R137 10K
Q106 2SC1740S
R133 3.3K
C121 0.01
C146 0.01
C147 47/16
C150 100P
IC103 LM7000
R139 10K
R138 10 (1/4WFL)
R141 1K
Q108 C3194
R142 1K
R140 150K
D104 1SS131
Q109 DTA114ES
+12V
680 R506
390 R505
270 R504
S507 POWER
S506 CLOCK/ DISPLAY
S505 TIMER/ STANDBY
C501 0.022
<RDS PART>
※J102
※J103
C203 100P
IC201 SAA6579
C204 2.2/50
C205 47/16
C206 560P
X201 4.332MHz
C202 27P
C201 27P
C207 47/16
X202 CST4.00MGW
R204 1M
R205 1K
※J101
IC202 LC7074M
C211 47/16
C210 0.01
D007 1SS131
+5V/A
C161 1/50
Q109 1SS131
C158 3.3/50
C159 0.47/50
R153 1K
D108 1SS131
R152 2.2K
R156 10K
R155 100K
Q111 2SC1740S
D423 1SS131
D424 1SS131
C106 10/50
VR102 220K
C178 0.01
IC102 LA3410
※R150
※J111
C156 10/50
C157 0.047 (M)
※C184
※C183
R182 100K
R181 100K
JACK102 JK0200440N
Q117 DTC343TS
Q116 DTC343TS
R179 470
R180 470
Q115 C343TS
Q114 C343TS
※R158
※R157
※C166
※C165
R162 3.3K
※R161
※R160
R159 3.3K
C164 330P
C163 0.01
R151 100 (1/4WFL)
C162 47/16
CF105 CSB456F11
※J110
D110 1SS131
<MPX FILTER PART>
C168 2700P (M)
C167 2700P (M)
C170 1800P (M)
C172 1200P (M)
C171 1200P (M)
C169 1800P (M)
L102 39mH
L101 39mH
R177 470
R178 470
C175 2.2/50
C174 2.2/50
R171 5.6K
R172 5.6K
R164 12K
R163 12K
C173 47/16
※J106
※D302
※D301
※J105
Q113 2SC1740
Q112 2SC1740S
5.3V
R168 100
※R170
※R169
R167 100
4.9V
C181 10/50
R185 5.6K
Q118 DTA114ES
Q119 DTA114ES
C180 100/16
MUTE
<AM STEREO PART>
Q301 KTC3198 (Y/GR)
Q302 DTA114ES
C316 4.7/50
C315 CF0.1 (M)
C314 CF0.1 (M)
C313 10/50
C312 0.01
R303 2.4K
IC301
R301 7.5K
Q303 DTC114ES
C302 0.47/50
R302 10K
C301 0.01
C303 1/50
C307 0.22/50
C304 0.022
C308 4.7/50
R304 150
X301
C309 100/16
C310 0.01
J1 (WIRE)
C323 0.0022
R315 2K
C331 1/50 (BP)
9V
11V
Q307 KTC3198 (Y/GR)
R325 6.2K
R319 6.2K
Q305
R311 130K
C321 0.1/50
C319 0.1/50
R327 20K
R321 390
C329 0.0027 (M)
C327 0.0027 (M)
R307 7.5K
C317 0.01
R323 130
R317 3.3K
C325
0.0056 (M)
R309 5.6K
R313 27K
R322 130
C326 0.0056 (M)
R308 5.6K
R312 27K
D303 1SS131
R326 20K
R316 3.3K
C328 0.0027 (M)
R320 390
C330 0.0027 (M)
R306 7.5K
C318 0.01
Q308 KTC3198 (Y/GR)
R324 6.2K
R318 6.2K
Q306 KTC3198 (Y/GR)
C322 0.1/50
C320 0.1/50
D304 1SS131
C332 1/50 (BP)
R314 2K
R310 130K
C324 0.0022


6
7
8
9
10
11
A
B
C
D
E
F
G
H
FRONT
FL501
FLUORESCENT-DISPLAY-11BT27GK
DATE
TIME
TIMER
TUNED
ON STEREO
OFF MONO
AUTO
RDS
PS
TP
PTY
ADJ
MEMO
SLEEP
OFF
KHz
MHz
CH
R524-R539 47K (1/6) ×16
UPD78044AGF-057-3B9
IC501
CN501
JP501
S501 UP
S502 DOWN
S503 MONO/STEREO
S508 MEMO/ENT/NEXT
X401 CST4.19MGW
IC003 78M05
IC004 7812
IC001 ICPN15
Q001 2SC1740
Q002 2SC1740
Q004 2SA933
Q005 2SC1740
Q006 2SC1740
Q003 A916
Q401 2SC1740
Q402 2SA933
Q403 2SA933
Q404 DTC144ES
RESET
PT001
OUT101
TU101
J114
J115
F002
R050
CN101
YW396-32V 7.92m/m
E1: 115, 230V/50, 60Hz
E2: 230V/50Hz
EK: 230V/50Hz
J : 100V/50Hz, 60Hz
SW101
JACK104
L6Y8502-0600
+B LINE
SIGNAL LINE
Lch SIGNAL LINE
Rch SIGNAL LINE

< MAIN PARTS >

TITLE	JAPAN	ASIA	EUROPE	EK
R101	330 (1/4FL)	100 (1/4FL)	100 (1/4FL)	100 (1/4FL)
R102	X	X	4.7K	4.7K
R103	X	X	10K	10K
R107	56	56	22	22
R121	15K	15K	30K	30K
R126	X	47K	47K	47K
R150	X	X	3.3K	3.3K
R169	68K	22K	22K	22K
R170	68K	22K	22K	22K
R050	X	X	X	X
C103	X	X	10/50	10/50
C130	X	0.1uF (50V)	0.1uF (50V)	0.1uF (50V)
C133	X	X	470P	470P
C183	X	X	1000P	1000P
C184	X	X	1000P	1000P
D106	X	1SS131T	1SS131T	1SS131T
D107	X	1SS131T	1SS131T	1SS131T
D301	1SS131T	X	X	X
D302	1SS131T	X	X	X
J113	○	X	X	X
J111	○	○	X	X
J112	○	○	X	X
J106	X	○	○	○
J105	X	○	○	○
J109	○	○	X	X
J114	○	○	○	○
J115	○	X	○	○
J104	X	○	○	○
J108	X	X	○	○
J107	X	X	○	○
SW101	X	○	X	X
T106	X	X	○	○
F001	X	X	X	X
F002	125V/T4A	250V/T2.5A	250V/T2.5A	250V/T2.5A
CF102	SFE10.7MA5	SFE10.7MA5	SFE10.7MS3	SFE10.7MS3
CF101	SFE10.7MA5	SFE10.7MA5	SFE10.7MS3	SFE10.7MS3
~~C520~~	~~X~~	~~X~~	~~X~~	~~X~~
~~C521~~	~~X~~	~~X~~	~~X~~	~~X~~

< DE-EMPHASIS PARTS >

R157	120K	120K	180K	180K
R158	120K	120K	180K	180K
R161	120K	120K	200K	200K
R160	120K	120K	200K	200K
C165	470P	470P	270P	270P
C166	470P	470P	270P	270P

< OPTION PARTS >

D502	X	1SS131T	X	X
D503	X	1SS131T	1SS131T	1SS131T
D507	X	X	1SS131T	1SS131T
D508	1SS131T	X	X	X
OUT101	CCT1308-0211	32-7637-212	32-7637-212	32-7637-212
TU101	FE340-J04	FTH3-504VA	FE415-611	FE415-611
PT001	48040-004	48040-003	48040-001	48040-001

< RDS PARTS >

RDS	X	X	○	○
J103	X	X	○	○
J102	X	X	○	○
J101	X	X	○	○

< AM STEREO PARTS >

AM STEREO	○	X	X	X
J1 (WIRE)	○	X	X	X
J110	○	X	X	X
D303	○	X	X	X
D304	○	X	X	X

< MPX FILTER PARTS >

MPX	○	X	○	○
J120	X	○	X	X
J121	X	○	X	X

NOTES
ALL RESISTANCE VALUES IN OHM k 1,000 OHM, M - 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

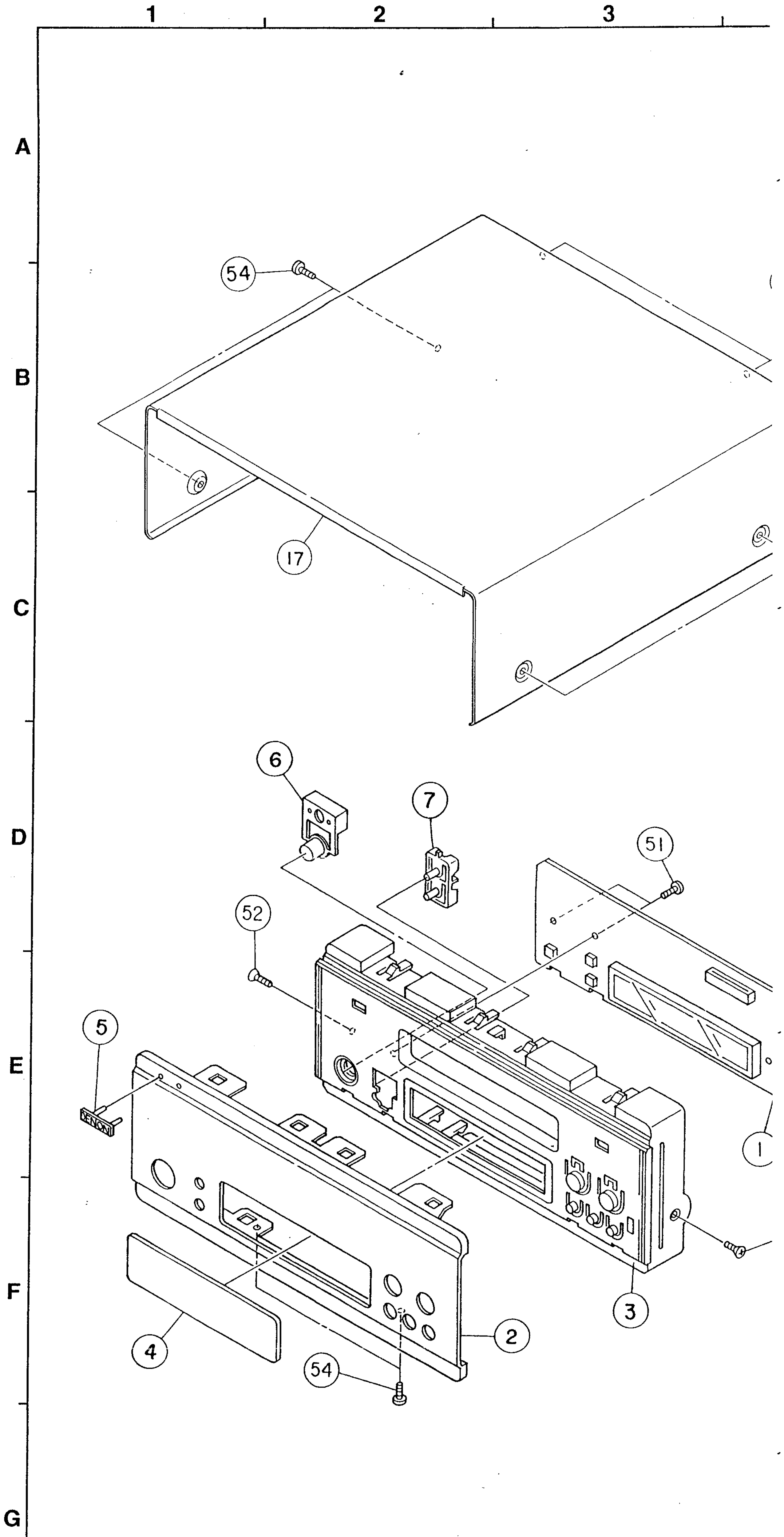
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

PARTS LIST OF EXPLODED VIEW

TUNER SECTION (UTU-F88)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	Main P.W.B.unit Ass'y		1s
1-1	—	Main P.W.B.unit	702802105003 Asia model	
1-1	—	Main P.W.B.unit	702802105002 Europe and U.K.model	(1)
1-2	—	Front P.W.B. unit	702802107103 Asia model	(1)
1-2	—	Front P.W.B. unit	702802107102 Europe and U.K.model	(1)
2	960 0081 501	Front panel	306702089802	1
3	960 0081 608	Inner panel	321702015102	1
4	960 0082 005	Window	507002039201	1
5	960 0079 209	DENON Badge	563000042801	1
6	960 0081 802	Power button	509702002103	1
7	960 0081 705	Knob	508002007101	1
8	960 0003 505	Foot cushion	405002007501	4
9	960 0003 408	Front foot	400700006001	2
10	960 0003 204	Rear foot	400000060001	2
11	960 0007 501	Chassis	320002011601	1
12	960 0003 301	Supporter P.W.B.	407000160101	1
14	960 0081 912	Rear panel	320702010614 Asia model	1
14	960 0081 925	Rear panel	320702010613 Europe and U.K.model	1
⚠ 15	960 0032 301	AC Cord	L06100041001 Asia and Europe model	1
⚠ 15	960 0032 301	AC Cord	L06100039003 U.K.model	1
⚠ 16	960 0003 602	Cord bush	438000018000	1
17	960 0006 308	Top cover	300002009601	1
20	960 0037 306	FM Tuner pack	E90000019000 Asia model	1
20	960 0037 306	FM Tuner pack	E90000011000 Europe and U.K.model	1
21	960 0008 209	4P Ant. terminal	JACK101	1
22	960 0004 407	Mini jack ϕ3.5	JACK103,104	2
⚠ 23	960 0037 500	AC Outlet (3 gang)	OUT101	1
24	960 0008 403	2P Pin jack	JACK102	1
⚠ 25	960 0034 202	Power transformer	820048040003 Asia model	1
⚠ 25	960 0034 600	Power transformer	820048040001 Europe and U.K.model	1
⚠ 27	960 0037 403	Voltage selector	G06000100001 Asia model only	1
51	960 9000 114	Screw 3x8 Btite ZNY/BH	B020030081B1	6
52	960 9000 130	Screw 3x8 Btite BK/FH	B020030083F1	2
53	960 9000 156	Screw 3x17 Btite ZNY/BH	B020030171B1	1
54	960 9000 208	Screw 3x8 Btite BK/BH	B020030083B1 Asia model	22
54	960 9000 208	Screw 3x8 Btite BK/BH	B020030083B1 Europe and U.K.model	20
55	960 9000 169	Screw 4x8 Ctite ZNY/BH	B020940081B1	2

EXPLODED VIEW



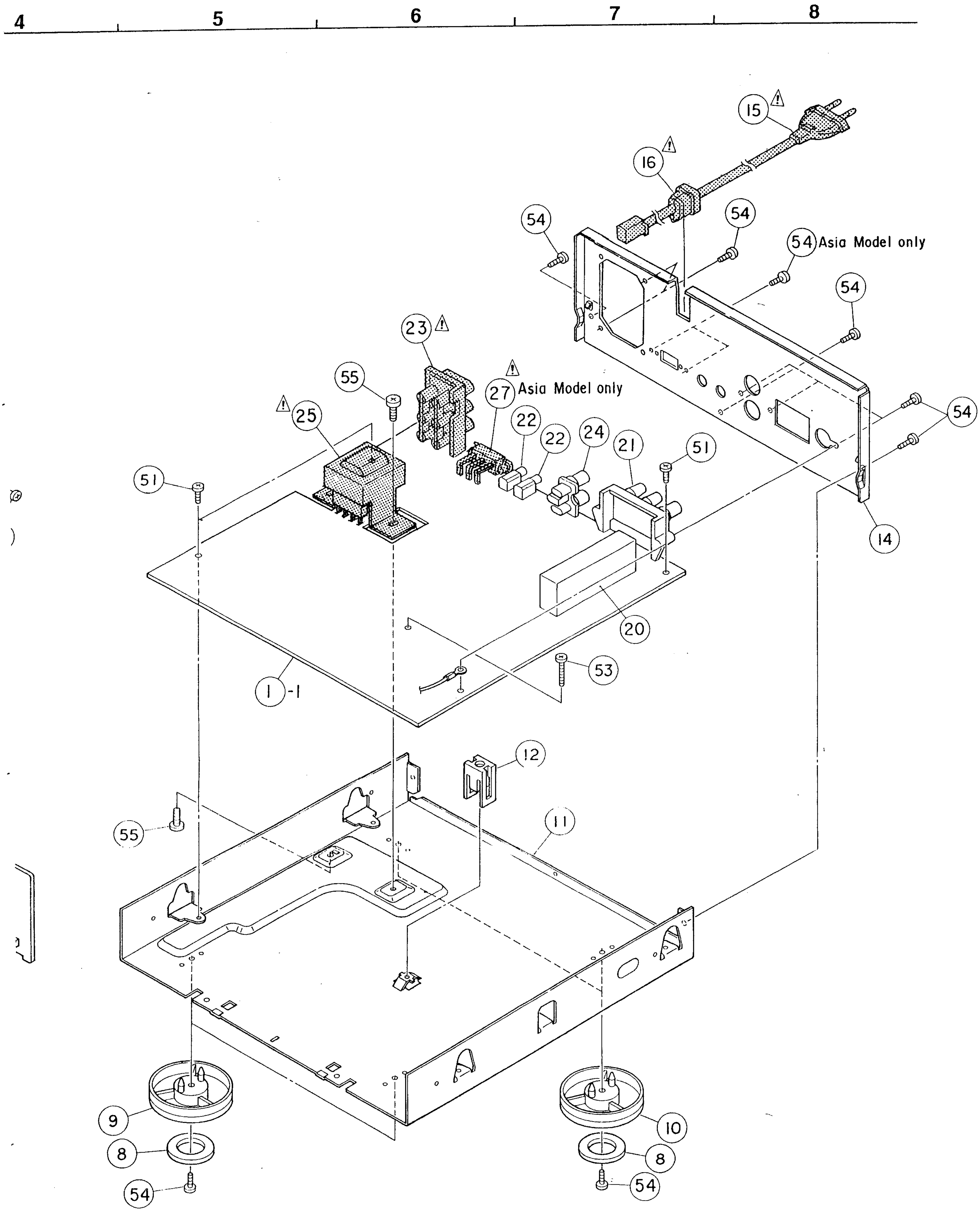
NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those part

WARNING:

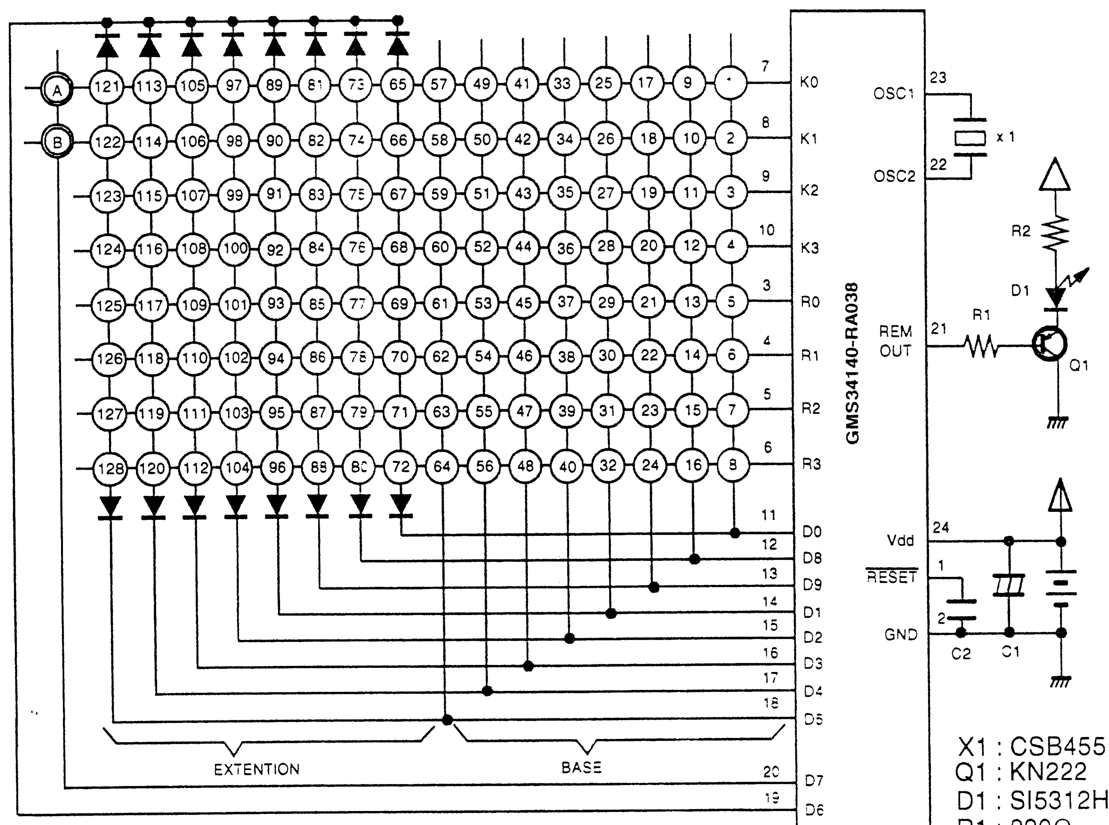
Parts marked with this symbol ⚠■ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

H


15 ⚠
16 ⚠
54 Asia Model only
23 ⚠
⚠ 27 Asia Model only
⚠ 25
1 -1

REMOTE CONTROL UNIT (RC-830: PARTS No. 960 0033 300 Europe model, RC-829: Part No. 960 0006 007 Asia model)

● Schematic Diagram

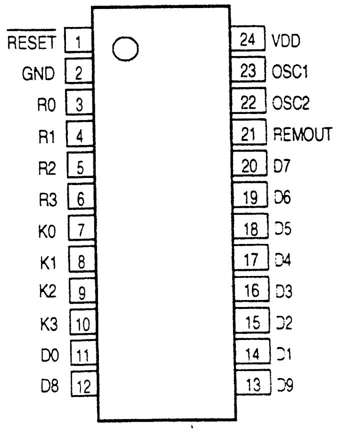

IC1
GMS34140-RA038
K0
K1
K2
K3
R0
R1
R2
R3
D0
D8
D9
D1
D2
D3
D4
D5
D7
D6
OSC1
OSC2
REM OUT
Vdd
RESET
GND
x 1
R2
D1
R1
Q1
C2
C1
EXTENTION
BASE
A
B

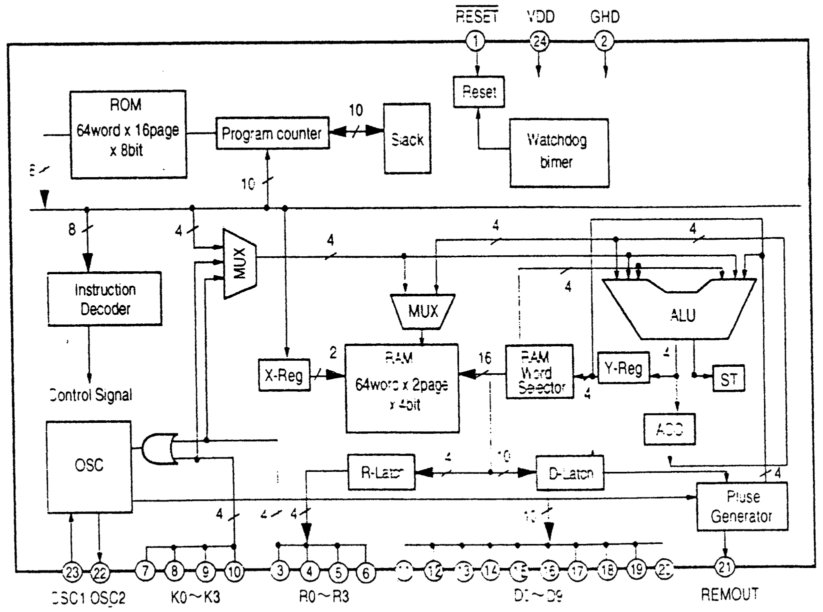
X1 : CSB455EB1
Q1 : KN222
D1 : SI5312H
R1 : 220Ω
R2 : 1Ω
C1 : 0.1μF/50V
C2 : 47μF/10V

NOTES
ALL RESISTANCE VALUES IN OHM K = 1,000 OHM M= 1,000,000 OHM
ALL CAPACITTANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

● IC

GMS30140


RESET 1
GND 2
R0 3
R1 4
R2 5
R3 6
K0 7
K1 8
K2 9
K3 10
D0 11
D8 12
24 VDD
23 OSC1
22 OSC2
21 REMOUT
20 D7
19 D6
18 D5
17 D4
16 D3
15 D2
14 D1
13 D9


RESET
VDD
GND
ROM 64word x 16page x 8bit
Program counter
Stack
Reset
Watchdog timer
Instruction Decoder
MUX
MUX
ALU
X-Reg
RAM 64word x 2page x 4bit
RAM Word Selector
Y-Reg
ST
ACC
Control Signal
OSC
R-Latch
D-Latch
Pulse Generator
OSC1 OSC2
K0~K3
R0~R3
D0~D9
REMOUT

* Europe model only

FIXED DATA

Key No.	Key Function	C1	C2	C3	C4	C5	HEX	C6	C7	C8	C9	C10	C11	HEX	C12	C13	C14	C15
1	BAND	0	0	1	1	0	0C	1	1	1	0	1	0	17	1	1	0	0
2	TUNER ▼	0	0	1	1	0	0C	0	1	0	1	1	0	1A	1	1	0	0
3	TUNER ▲	0	0	1	1	0	0C	1	0	0	1	1	0	19	1	1	0	0
4	MEMO	0	0	1	1	0	0C	1	0	0	0	1	0	11	1	1	0	0
* 5	RDS	0	0	1	1	0	0C	0	1	0	0	1	0	12	1	1	0	0
* 6	CT	0	0	1	1	0	0C	1	1	0	0	1	0	13	1	1	0	0
* 7	PTY	0	0	1	1	0	0C	0	0	1	0	1	0	14	1	1	0	0
* 8	PANEL	0	0	1	1	0	0C	0	1	1	1	1	0	1E	1	1	0	0
9	POWER	0	0	1	1	0	0C	0	0	0	0	1	0	10	1	0	0	0
10	FUNCTION	0	0	1	1	0	0C	1	1	1	1	1	0	1F	1	0	0	0
22	TUNER	0	0	1	1	0	0C	1	0	0	1	1	0	19	1	0	0	0
23	DIRECT	0	0	0	1	0	08	1	1	1	0	1	0	17	1	0	0	0
24	PROGRAM	0	0	0	1	0	08	1	0	1	1	0	0	0D	1	0	0	0
27	◀	0	0	1	0	0	04	1	1	1	0	1	0	17	1	0	0	0
28	■	0	0	1	0	0	04	0	1	1	1	1	0	1E	1	0	0	0
29	▶	0	0	1	0	0	04	0	0	1	1	1	0	1C	1	0	0	0
30	▶▶	0	0	1	0	0	04	0	1	0	1	1	0	1A	1	0	0	0
31	●REC MUTE	0	0	1	0	0	04	1	1	1	1	1	0	1F	1	0	0	0
32	RESET	0	0	1	0	0	04	0	0	1	0	1	0	14	1	0	0	0
33	◀◀	0	0	1	0	0	04	1	1	0	1	1	0	1B	1	0	0	0
37	PRESET ▲	0	0	1	0	0	0C	0	1	1	1	0	0	0E	1	0	0	0
38	PRESET ▼	0	0	1	0	0	0C	1	1	1	1	0	0	0F	1	0	0	0
39	VOLUME ▲	0	0	1	0	0	0C	1	0	1	1	0	0	0D	1	0	0	0
40	VOLUME ▼	0	0	1	0	0	0C	0	0	1	1	0	0	0C	1	0	0	0

CD MODE

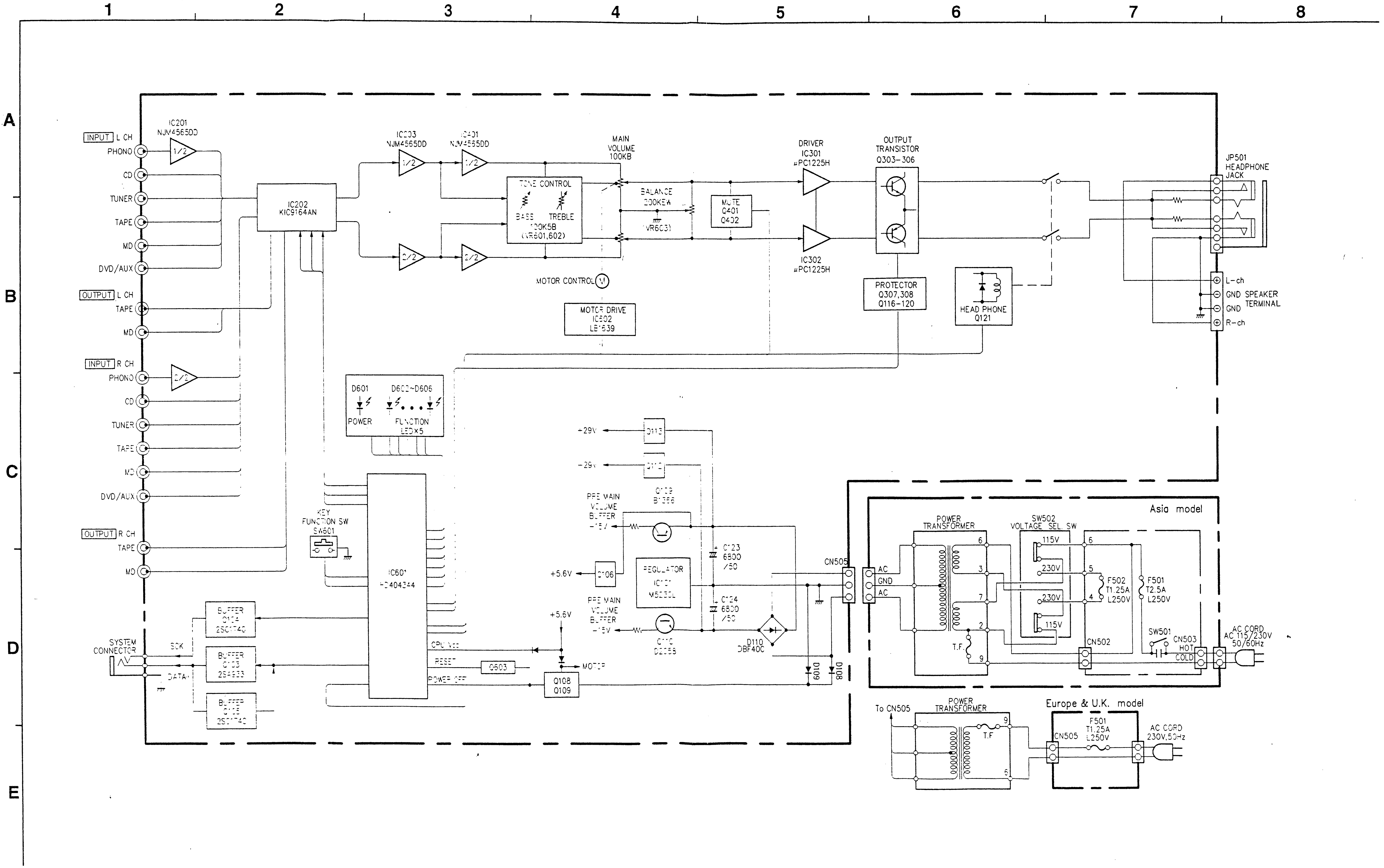
Key No.	Key Function	C1	C2	C3	C4	C5	HEX	C6	C7	C8	C9	C10	C11	HEX	C12	C13	C14	C15
11	1	0	0	0	1	0	08	0	1	0	0	0	0	02	1	0	0	0
12	2	0	0	0	1	0	08	1	1	0	0	0	0	03	1	0	0	0
13	3	0	0	0	1	0	08	0	0	1	0	0	0	04	1	0	0	0
14	4	0	0	0	1	0	08	1	0	1	0	0	0	05	1	0	0	0
15	5	0	0	0	1	0	08	0	1	1	0	0	0	06	1	0	0	0
16	6	0	0	0	1	0	08	1	1	1	0	0	0	07	1	0	0	0
17	7	0	0	0	1	0	08	0	0	0	1	0	0	08	1	0	0	0
18	8	0	0	0	1	0	08	1	0	0	1	0	0	09	1	0	0	0
19	9	0	0	0	1	0	08	0	1	1	1	0	0	0A	1	0	0	0
20	10	0	0	0	1	0	08	1	1	1	1	0	0	0B	1	0	0	0
21	+10	0	0	0	1	0	08	0	0	0	1	0	0	0C	1	0	0	0
42	RANDOM	0	0	0	1	0	08	0	1	0	1	0	1	2A	1	0	0	0
50	CANCEL	0	0	0	1	0	08	1	0	0	0	1	0	11	1	0	0	0
52	TIME	0	0	0	1	0	08	1	1	0	0	1	0	13	1	0	0	0
53	REPEAT	0	0	0	1	0	08	0	0	1	0	1	0	14	1	0	0	0
55	EDIT	0	0	0	1	0	08	0	0	0	0	1	1	30	1	0	0	0
56	SLEEP	0	0	1	1	0	0C	0	1	0	0	1	1	32	1	0	0	0
57	▶▶|	0	0	0	1	0	08	0	0	0	1	1	0	18	1	0	0	0
58	|◀◀	0	0	0	1	0	08	1	0	0	1	1	0	19	1	0	0	0
59	▶▶	0	0	0	1	0	08	0	1	0	1	1	0	1A	1	0	0	0
60	◀◀	0	0	0	1	0	08	1	1	0	1	1	0	1B	1	0	0	0
61	▶	0	0	0	1	0	08	0	0	1	1	1	0	1C	1	0	0	0
63	■	0	0	0	1	0	08	0	1	1	1	1	0	1E	1	0	0	0
65	STOP	0	1	1	0	0	06	1	0	0	0	0	1	21	1	1	0	0
66	PLAY	0	1	1	0	0	06	0	1	0	0	0	1	22	1	1	0	0
67	MANUAL SEARCH(FWD)	0	1	1	0	0	06	1	1	0	1	0	1	2B	1	1	0	0
68	MANUAL SEARCH(RVS)	0	1	1	0	0	06	0	0	1	1	0	1	2C	1	1	0	0

TUNER MODE

Key No.	Key Function	C1	C2	C3	C4	C5	HEX	C6	C7	C8	C9	C10	C11	HEX	C12	C13	C14	C15
11	1	0	0	1	1	0	0C	0	1	0	0	0	0	02	1	0	0	0
12	2	0	0	1	1	0	0C	1	1	0	0	0	0	03	1	0	0	0
13	3	0	0	1	1	0	0C	0	0	1	0	0	0	04	1	0	0	0
14	4	0	0	1	1	0	0C	1	0	1	0	0	0	05	1	0	0	0
15	5	0	0	1	1	0	0C	0	1	1	0	0	0	06	1	0	0	0
16	6	0	0	1	1	0	0C	1	1	1	0	0	0	07	1	0	0	0
17	7	0	0	1	1	0	0C	0	0	0	1	0	0	08	1	0	0	0
18	8	0	0	1	1	0	0C	1	0	0	1	0	0	09	1	0	0	0
19	9	0	0	1	1	0	0C	1	1	0	0	0	1	23	1	0	0	0
20	10	0	0	1	1	0	0C	0	0	1	0	0	1	24	1	0	0	0
21	+10	0	0	1	1	0	0C	1	1	1	1	0	1	2F	1	0	0	0

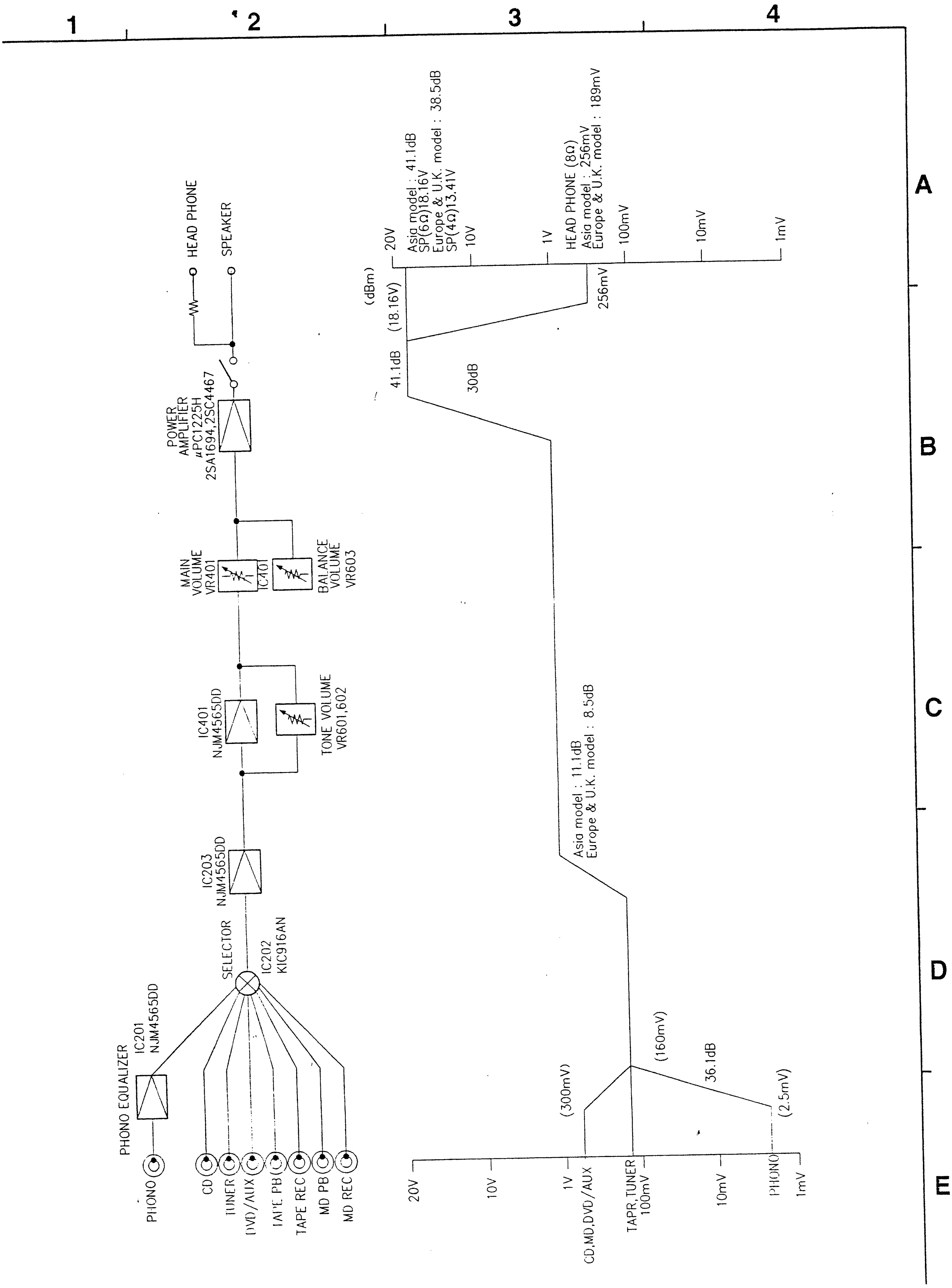
AMPLIFIER SECTION

BLOCK DIAGRAM


1
2
3
4
5
6
7
8
A
B
C
D
E
INPUT L CH
PHONO
CD
TUNER
TAPE
MD
DVD/AUX
OUTPUT L CH
TAPE
MD
INPUT R CH
PHONO
CD
TUNER
TAPE
MD
DVD/AUX
OUTPUT R CH
TAPE
MD
IC201
NJM4565DD
1/2
2/2
IC202
KIC9164AN
IC203
NJM4565DD
IC401
NJM4565DD
1/2
2/2
TONE CONTROL
BASS
TREBLE
100K5B
(VR601,602)
MAIN
VOLUME
100KB
BALANCE
200KEW
(VR603)
MOTOR CONTROL
M
MOTOR DRIVE
IC602
LB1639
MUTE
Q401
Q402
DRIVER
IC301
μPC1225H
IC302
μPC1225H
OUTPUT
TRANSISTOR
Q303-306
PROTECTOR
Q307,308
Q116-120
HEAD PHONE
Q121
JP501
HEADPHONE
JACK
L-ch
GND
GND
R-ch
SPEAKER
TERMINAL
D601
POWER
D602~D606
FUNCTION
LED×5
KEY
FUNCTION SW
SW601
IC601
HD404344
CPU Vcc
RESET
POWER OFF
Q603
+5.6V
MOTOR
Q108
Q109
SYSTEM
CONNECTOR
SCK
DATA
BUFFER
Q104
2SC1740
BUFFER
Q105
2SA933
BUFFER
Q115
2SC1740
+29V
Q113
-29V
Q112
PRE MAIN
VOLUME
BUFFER
+15V
Q109
B1366
+5.6V
Q106
REGULATOR
IC101
M5230L
PRE MAIN
VOLUME
BUFFER
-15V
Q110
D2055
C123
6800
/50
C124
6800
/50
D110
DBF40C
D109
D108
CN505
AC
GND
AC
Asia model
POWER
TRANSFORMER
SW502
VOLTAGE SEL SW
115V
230V
230V
115V
6
3
7
2
9
6
5
4
T.F.
F502
T1.25A
L250V
F501
T2.5A
L250V
CN502
SW501
CN503
HOT
COLD
AC CORD
AC 115/230V
50/60Hz
Europe & U.K. model
To CN505
POWER
TRANSFORMER
T.F
9
6
F501
T1.25A
L250V
CN505
AC CORD
230V,50Hz

LEVEL DIAGRAM

AMPLIFIER SECTION


1
2
3
4
A
B
C
D
E
PHONO
CD
TUNER
DVD/AUX
TAPE PB
TAPE REC
MD PB
MD REC
PHONO EQUALIZER
IC201
NJM4565DD
SELECTOR
IC202
KIC916AN
IC203
NJM4565DD
IC401
NJM4565DD
TONE VOLUME
VR601,602
MAIN VOLUME
VR401
IC401
BALANCE VOLUME
VR603
POWER AMPLIFIER
μPC1225H
2SA1694,2SC4467
HEAD PHONE
SPEAKER
20V
10V
1V
100mV
10mV
1mV
(dBm)
Asia model : 41.1dB
SP(6Ω)18.16V
Europe & U.K. model : 38.5dB
SP(4Ω)13.41V
HEAD PHONE (8Ω)
Asia model : 256mV
Europe & U.K. model : 189mV
(18.16V)
256mV
41.1dB
30dB
Asia model : 11.1dB
Europe & U.K. model : 8.5dB
(300mV)
(160mV)
36.1dB
(2.5mV)
CD,MD,DVD/AUX
TAPR,TUNER
PHONO

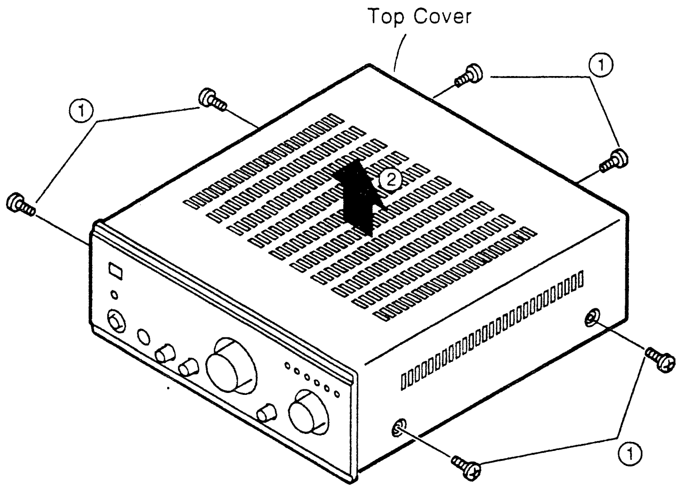
AMPLIFIER SECTION

DISASSEMBLY PROCEDURES

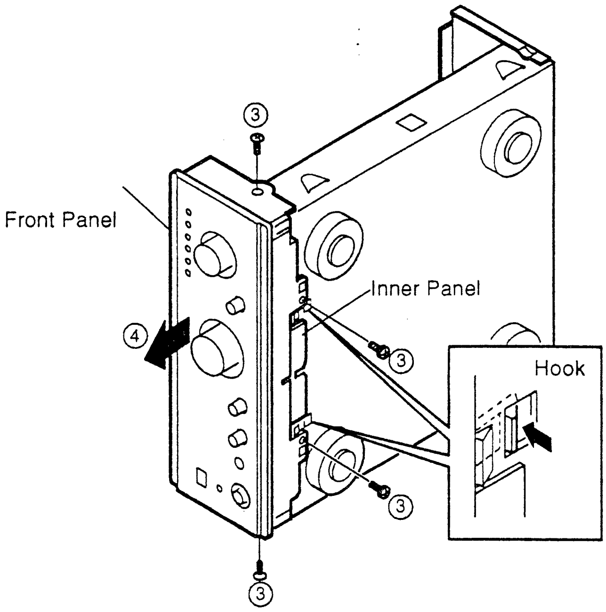
(Assembly is performed in the reverse order.)

1. Top Cover and Front Panel

① Remove 6 screws mounting on the Top Cover.
② Detach the Top Cover in the arrow direction.


Top Cover
①
①
②
①

③ Remove 2 each screws fastening the Front Panel on the bottom and both side.
④ While releasing 2 hooks of the Inner panel from the chassis, pull toward arrow direction and detach the Front Panel and the Inner Panel as a whole.

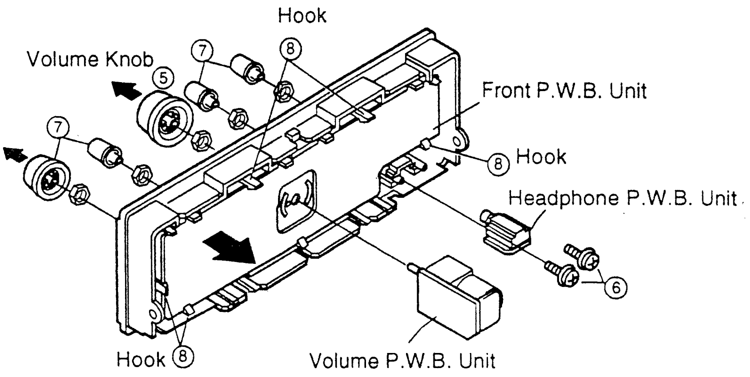

③
Front Panel
Inner Panel
④
③
Hook
③
③

2. Front Unit Ass'y P.W.B. Unit

- **Volume P.W.B. Unit**
  ⑤ Pull out the Volume Knob as shown in figure, and remove nut, then detach the Volume P.W.B. Unit.

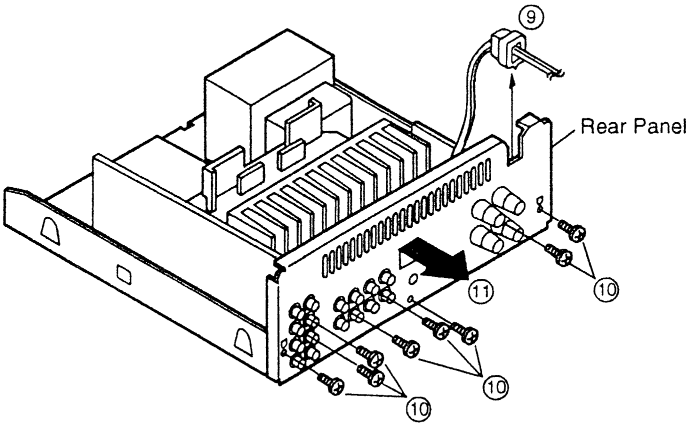
- **Headphone P.W.B. Unit**
  ⑥ Remove 2 screws mounting Headphone P.W.B. Unit on the Front Panel, then detach the Headphone P.W.B. Unit.

- **Front P.W.B. Unit**
  ⑦ Remove 4 screws fastening the Front Panel P.W.B. Unit.
  ⑧ While releasing 12 hooks, detach the Front P.W.B. Unit in the arrow direction.


Hook
Volume Knob
⑦
⑧
⑤
Front P.W.B. Unit
⑦
⑧ Hook
Headphone P.W.B. Unit
⑥
Hook ⑧
Volume P.W.B. Unit

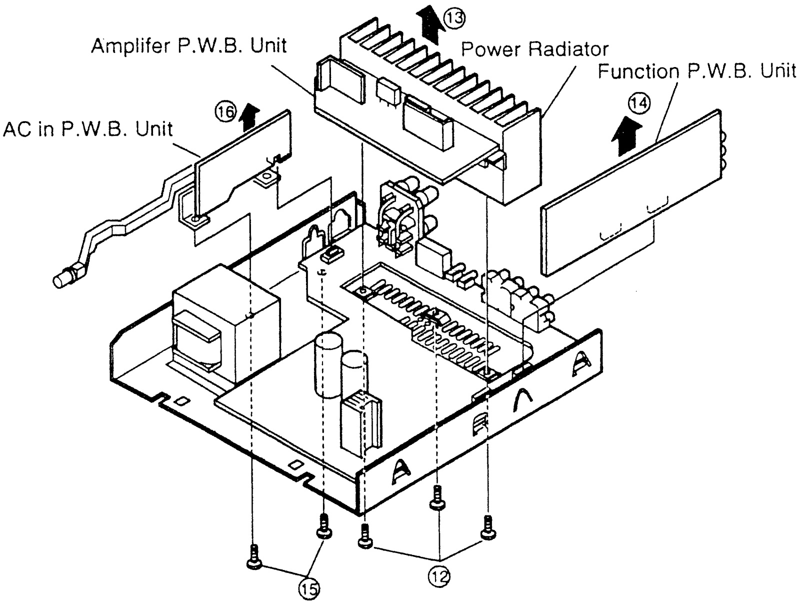
3. Rear Panel

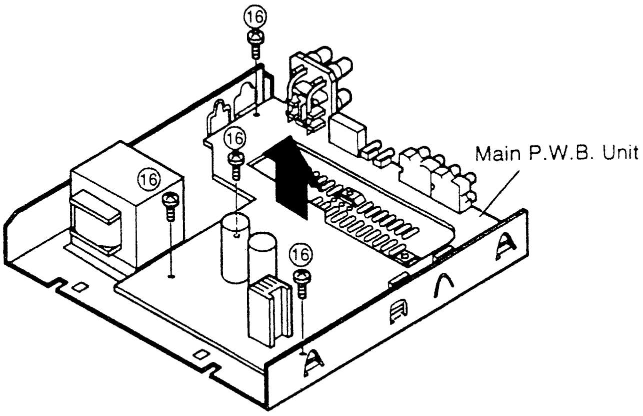
⑨ Remove the Cord Bush from the Rear Panel.
⑩ Remove 8 screws fixing the Rear Panel.
⑪ Detach the Rear Panel in the arrow direction.


⑨
Rear Panel
⑪
⑩
⑩
⑩

4. Main Unit Ass'y P.W.B.

- **Amplifier P.W.B. Unit**
  ⑫ Remove 2 screws mounting the power Radiator on the chassis.
  ⑬ Detach the Amplifier P.W.B. Unit and the Power Radiator as a whole.
- **Function P.W.B. Unit**
  ⑭ Pull out the Function P.W.B. Unit from cennector as shown in figure.
- **AC in P.W.B. Unit**
  ⑮ Pull out the AC in P.W.B. Unit from connector in the arrow direction.
- **Main P.W.B. Unit**
  ⑯ Remove 4 screws fixing the Main P.W.B. Unit, then detach the Main P.W.B.Unit in the arrow direction.

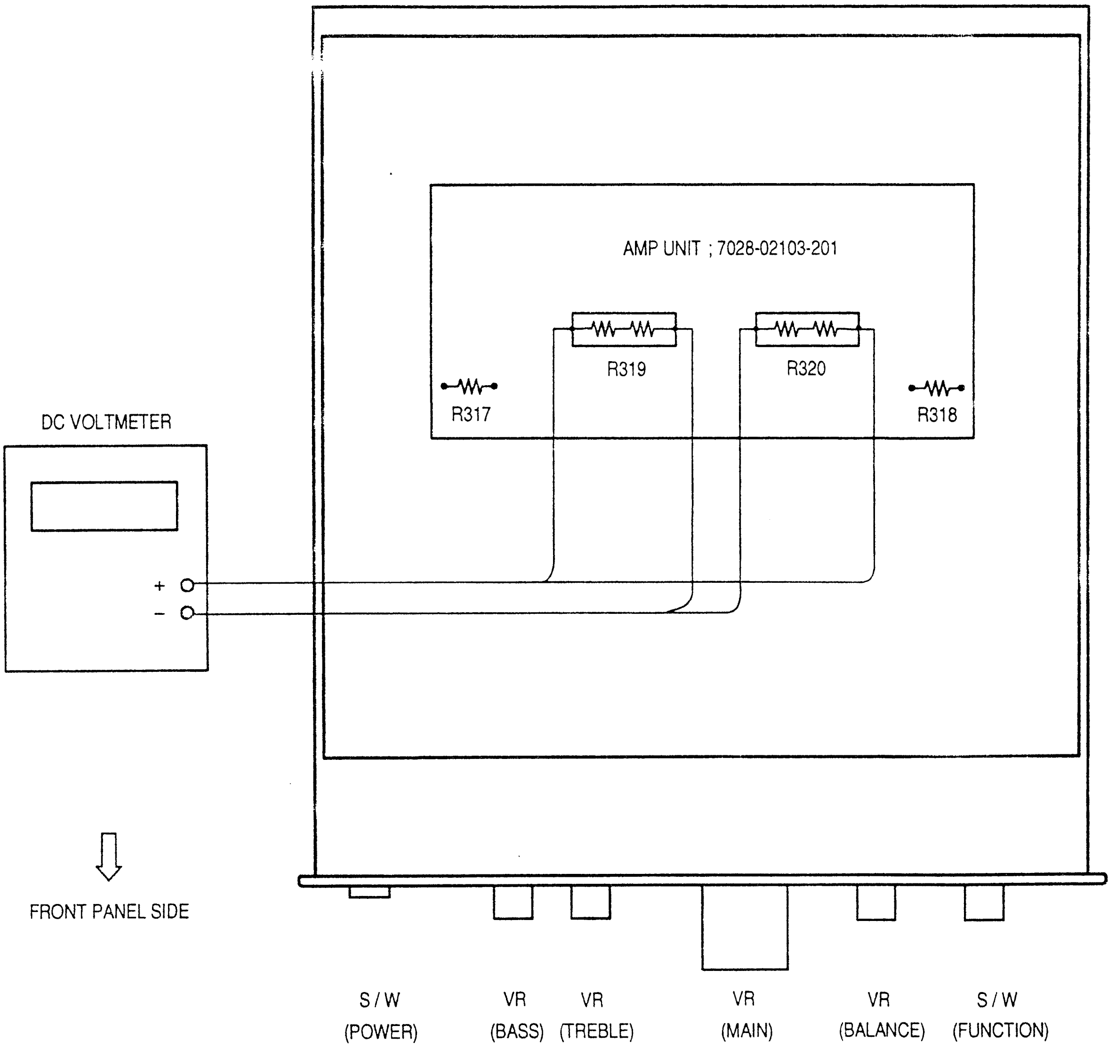

⑬
Amplifer P.W.B. Unit
Power Radiator
Function P.W.B. Unit
⑭
⑯
AC in P.W.B. Unit
⑮
⑫


⑯
⑯
⑯
⑯
Main P.W.B. Unit

AMPLIFIER SECTION

ADJUSTMENTS

WIRING DIAGRAM


AMP UNIT ; 7028-02103-201
R319
R320
R317
R318
DC VOLTMETER
+
−
FRONT PANEL SIDE
S / W
(POWER)
VR
(BASS)
VR
(TREBLE)
VR
(MAIN)
VR
(BALANCE)
S / W
(FUNCTION)

1. Measuring Instruments Required for the Adjustments

- DC voltmeter

2. Preparation

① Place the set in a location having normal usage conditions and avoid places with strong drafts such as near coolers or fans. The operating temperature of the set should be between 15 ℃ and 30 ℃ and the humidity should be normal.

② Set the switches of the set as follows:

- POWER switch → ON (▬)
- SPEAKER terminals → No load (Do not connect speakers or dummy resistors)
- INPUT terminals → No input

ADJUSTMENTS

① Remove the top cover and connect the DC voltmeter to the test points of the Amp. unit (7028-02103-201)

② Connect the power cable to a rated voltage AC source and set power switch to "ON (▬)."

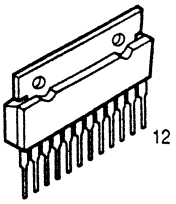
③ After 10 minutes, read the voltmeter and check that the reading is in the range of 2 mV to 40mV (DC).

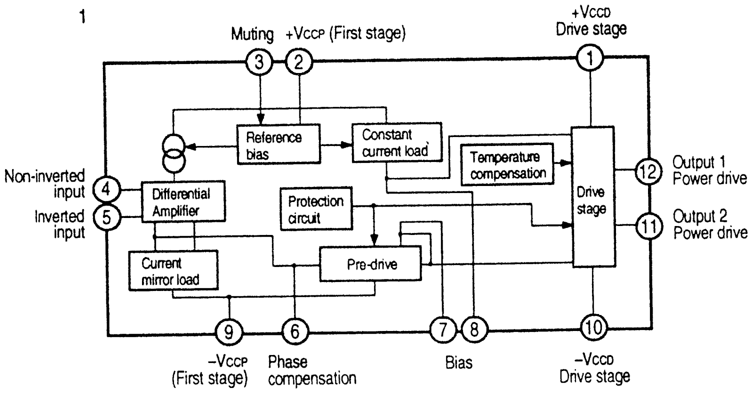
④ When the value read from the voltmeter is 2 mV or less, cut R317 and R318 (2 kohm) shown in the above diagram.

SEMICONDUCTORS

● IC's

μPC1225H(IC301,302)

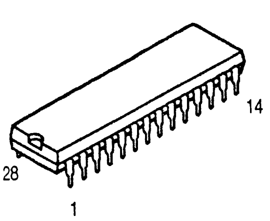


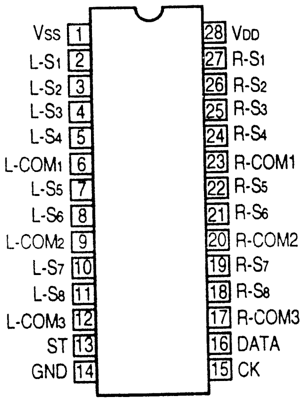

Muting
+Vccp (First stage)
+Vccd
Drive stage
3
2
1
Reference bias
Constant current load
Temperature compensation
Drive stage
Non-inverted input
4
Inverted input
5
Differential Amplifier
Protection circuit
Current mirror load
Pre-drive
12
Output 1 Power drive
11
Output 2 Power drive
9
6
7
8
10
−Vccp (First stage)
Phase compensation
Bias
−Vccd Drive stage

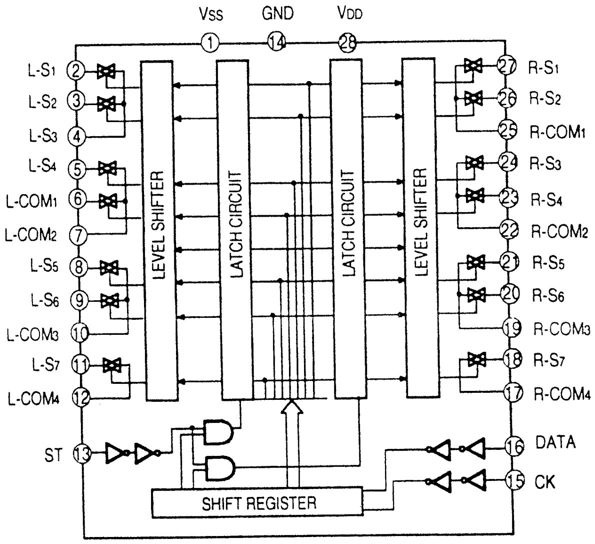
μPC1225H Function Terminal

Pin No.	Function
1	+Vccd (drive stage power supply)
2	+Vccp (pre-drive stage power supply)
3	MUTING
4	INPUT (non-inverting)
5	NFB (inverting)
6	PHASE COMP
7	BIAS
8	BIAS
9	−Vccp (pre-drive stage power supply)
10	−Vccd (drive stage power supply)
11	LOWER OUTPUT
12	UPPER OUTPUT

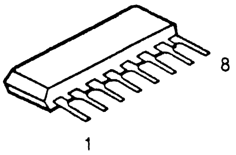
KIC9164AN(IC202)

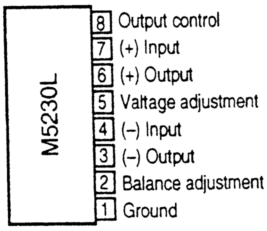


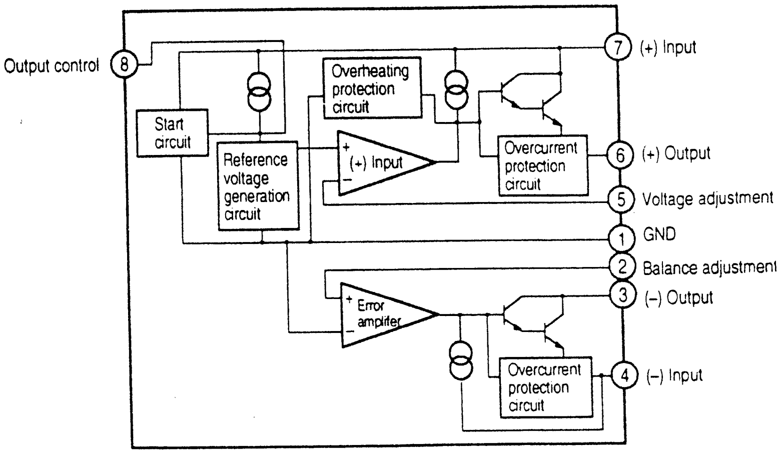

Vss 1
L-S1 2
L-S2 3
L-S3 4
L-S4 5
L-COM1 6
L-S5 7
L-S6 8
L-COM2 9
L-S7 10
L-S8 11
L-COM3 12
ST 13
GND 14
28 VDD
27 R-S1
26 R-S2
25 R-S3
24 R-S4
23 R-COM1
22 R-S5
21 R-S6
20 R-COM2
19 R-S7
18 R-S8
17 R-COM3
16 DATA
15 CK


Vss
GND
VDD
1
14
28
L-S1 2
L-S2 3
L-S3 4
L-S4 5
L-COM1 6
L-COM2 7
L-S5 8
L-S6 9
L-COM3 10
L-S7 11
L-COM4 12
ST 13
LEVEL SHIFTER
LATCH CIRCUIT
LATCH CIRCUIT
LEVEL SHIFTER
27 R-S1
26 R-S2
25 R-COM1
24 R-S3
23 R-S4
22 R-COM2
21 R-S5
20 R-S6
19 R-COM3
18 R-S7
17 R-COM4
16 DATA
15 CK
SHIFT REGISTER

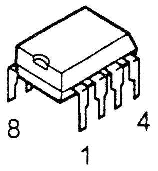
M5230L(IC101)

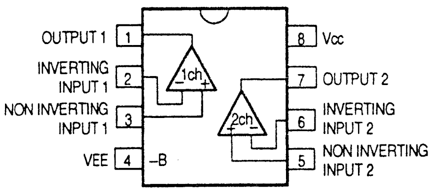



M5230L
8 Output control
7 (+) Input
6 (+) Output
5 Valtage adjustment
4 (−) Input
3 (−) Output
2 Balance adjustment
1 Ground

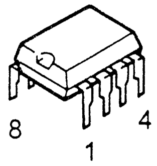

Output control
8
Start circuit
Reference voltage generation circuit
Overheating protection circuit
(+) Input
Overcurrent protection circuit
7 (+) Input
6 (+) Output
5 Voltage adjustment
1 GND
2 Balance adjustmen
3 (−) Output
Error amplifer
Overcurrent protection circuit
4 (−) Input

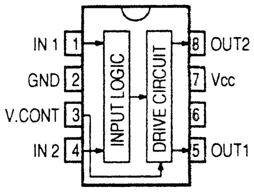
NJM4565DD (IC201, 203,401)




OUTPUT 1 1
INVERTING INPUT 1 2
NON INVERTING INPUT 1 3
VEE 4 –B
8 Vcc
7 OUTPUT 2
6 INVERTING INPUT 2
5 NON INVERTING INPUT 2
1ch
2ch

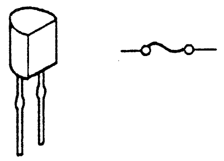
LB1639
(IC602)




IN 1 1
GND 2
V.CONT 3
IN 2 4
8 OUT2
7 Vcc
6
5 OUT1
INPUT LOGIC
DRIVE CIRCUIT

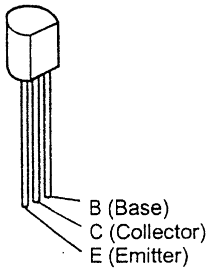
● IC PROTECTOR

ICP-N15/ICP-F15
(IC102~104)

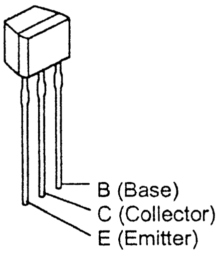


● TRANSISTORS

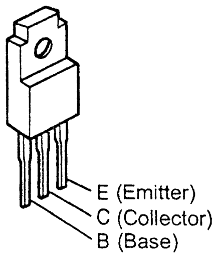
KSA992 (F)
KSC1845 (F)
KTC2878 (A/B)


B (Base)
C (Collector)
E (Emitter)

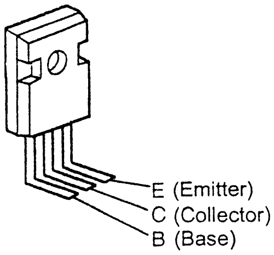
2SA933S (S)
2SC1740S (R)
2SC1740S (E)


B (Base)
C (Collector)
E (Emitter)

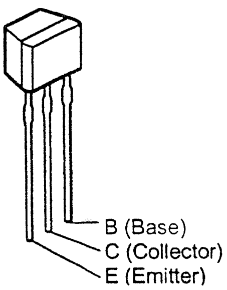
KTB1366 (Y)
KTD2058 (Y)


E (Emitter)
C (Collector)
B (Base)

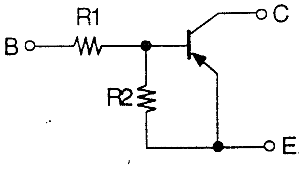
2SA1694 (O/P/Y)
2SC4467 (O/P/Y)


E (Emitter)
C (Collector)
B (Base)

DTA124ES (PNP)
DTA144ES (PNP)
DTC144ES (NPN)
DTC114ES (NPN)

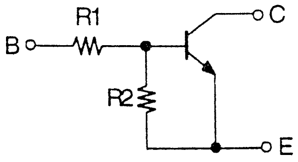

B (Base)
C (Collector)
E (Emitter)

PNP Type
DTA ES Series



	R1	R2
DTA144ES	47kΩ	47kΩ

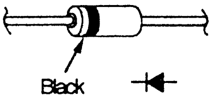
NPN Type
DTC ES Series



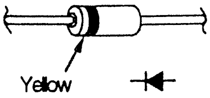
	R1	R2
DTC144ES	47kΩ	47kΩ

● DIODE (included LED)

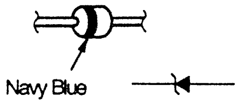
1N4002A



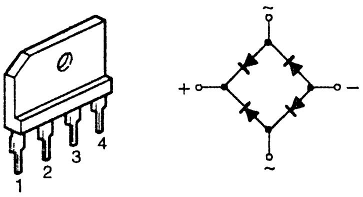
1SS131



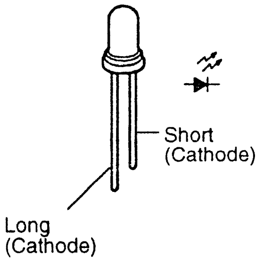
MTZJ13B : Europe model
MTZJ6.2B : Asia model
MTZJ12B
MTZJ16B



D3SB20/DBF40C
(D110)

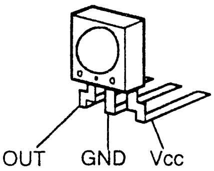


SLR34DC3
(D602~608)Orange


Short
(Cathode)
Long
(Cathode)

● INFRARED REMOTE CONTROL SENSOR

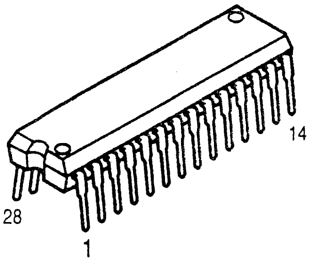
PNA4602M00LB
(A601)

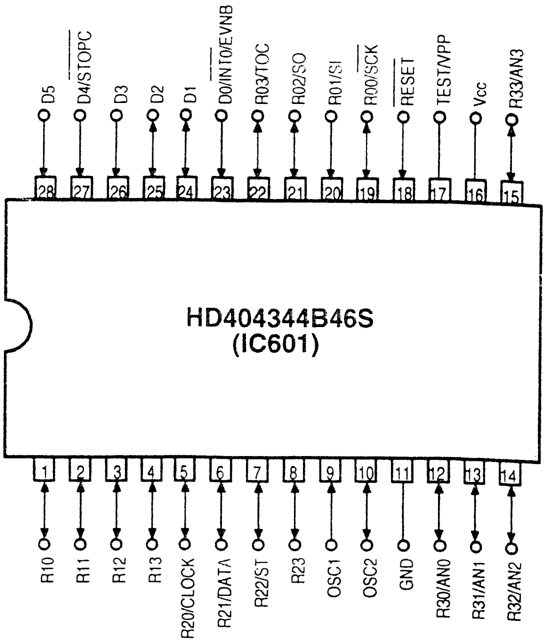


AMPLIFIER SECTION

MICROPROCESSOR DOCUMENTATION

HD404344B46S
(IC601)

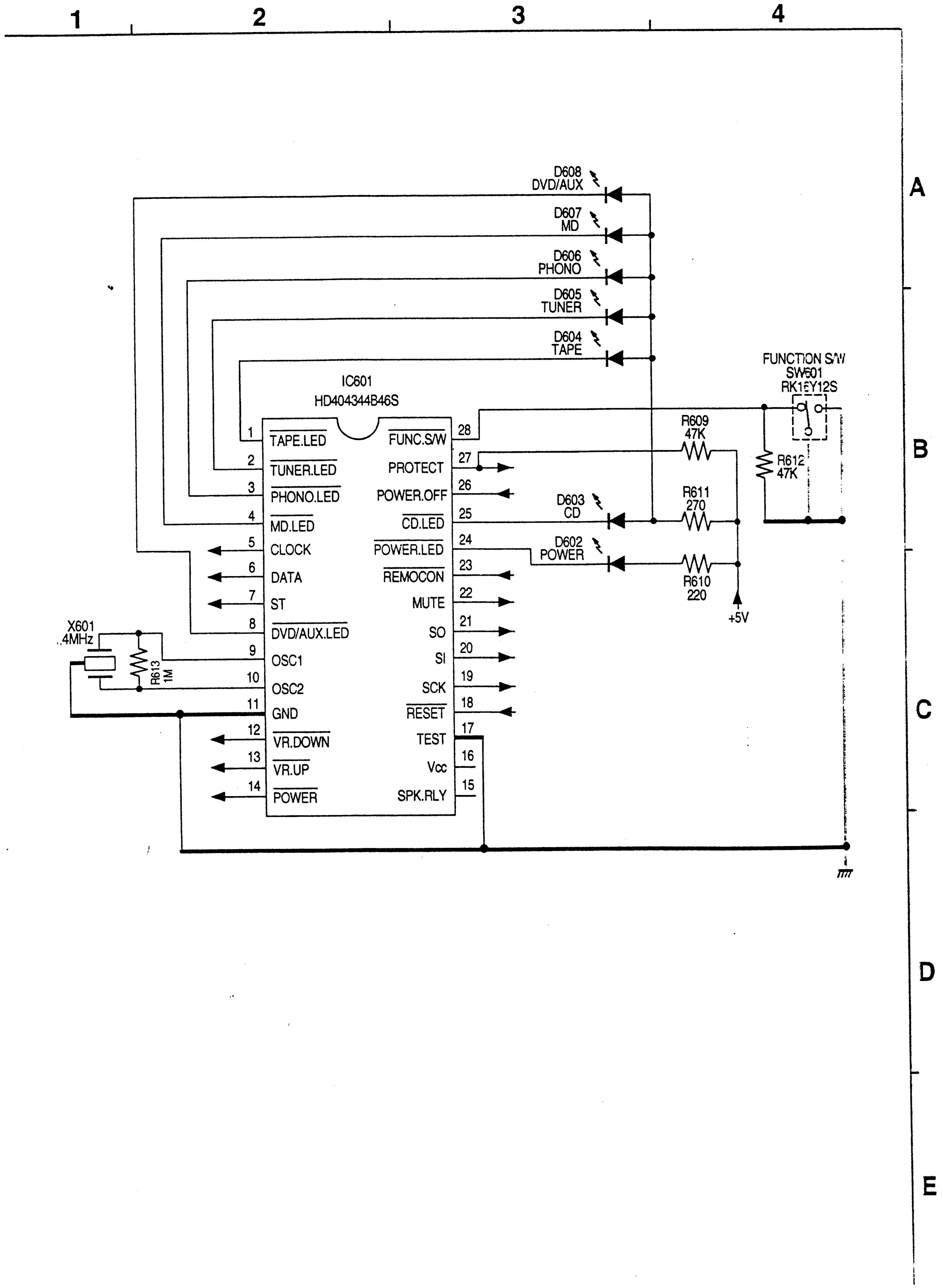


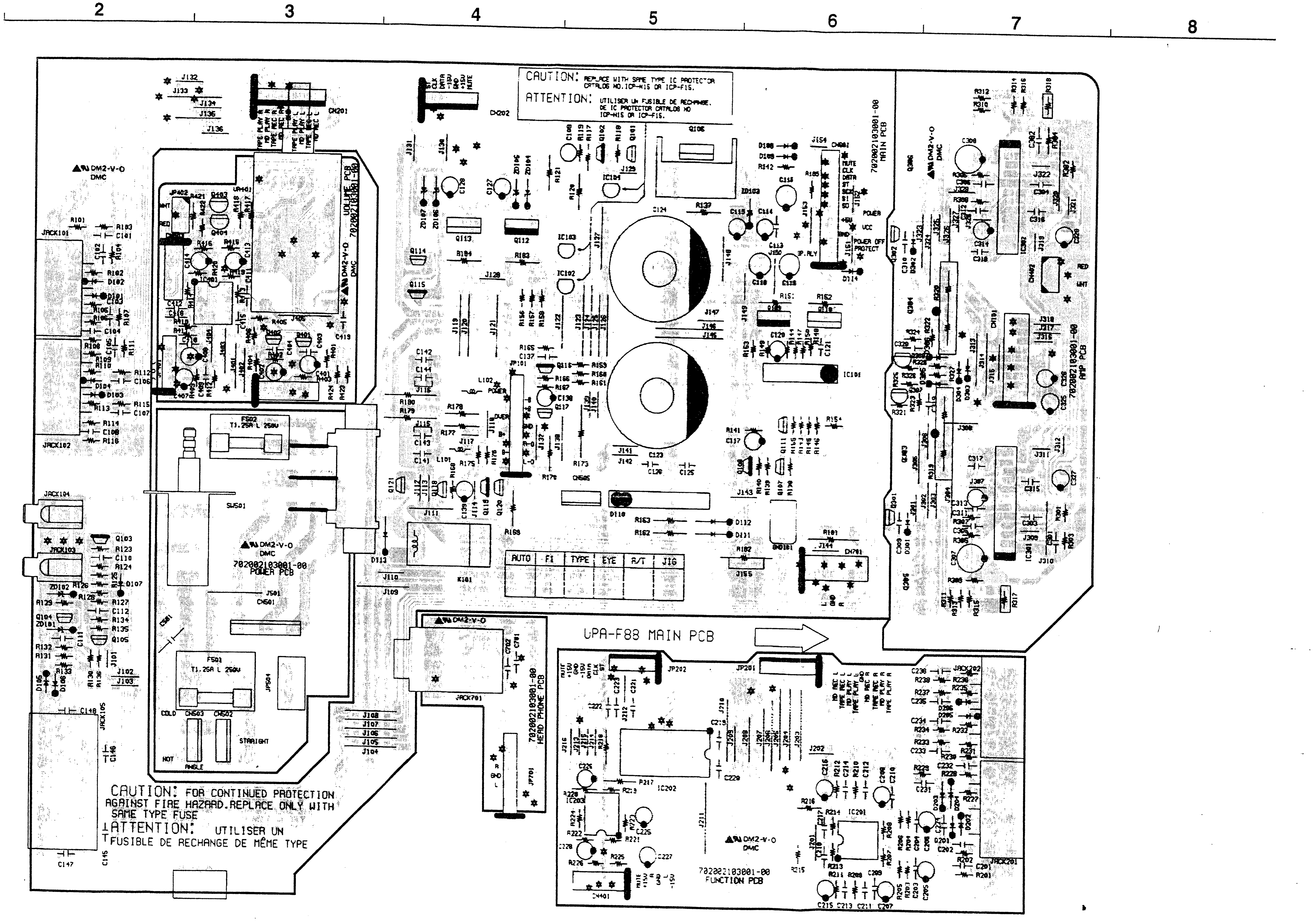

D5
D4/STOPC
D3
D2
D1
D0/INT0/EVNB
R03/TOC
R02/SO
R01/SI
R00/SCK
RESET
TEST/VPP
Vcc
R33/AN3
28
27
26
25
24
23
22
21
20
19
18
17
16
15
HD404344B46S
(IC601)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
R10
R11
R12
R13
R20/CLOCK
R21/DATA
R22/ST
R23
OSC1
OSC2
GND
R30/AN0
R31/AN1
R32/AN2

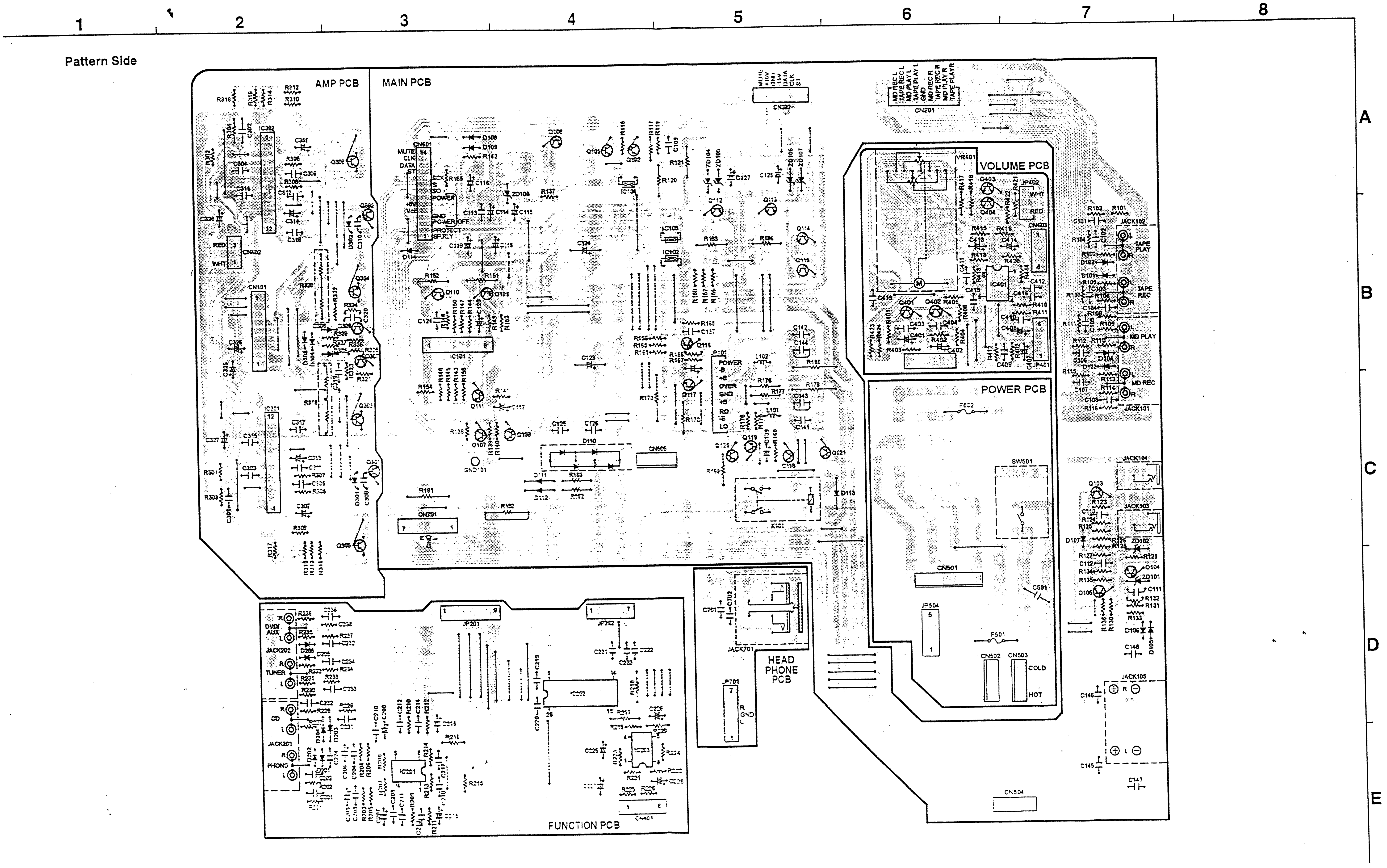
HD404344B46S Terminal Function

No.	Terminal Name	Port Name	I/O	Ini	ACT	Function
1	R10	TAPE LED	O	H	L	LED "TAPE" indication signal. ON at "L"
2	R11	TUNER LED	O	H	L	LED "TUNER" indication signal. ON at "L"
3	R12	PHONO LED	O	H	L	LED "PHONE" indication signal. ON at "L"
4	R13	MD/LED	O	H	L	LED "MD/AUX" indication signal. ON at "L"
5	R20	CLOCK	O	H	—	Serial clock output for IC202.
6	R21	DATA	O	H	—	Serial data output for IC202.
7	R22	ST.	O	H	—	Chip enable signal.
8	R23	DVD/AUX LED	O	H	L	Fix to GND.
9	OSC1	OSC IN	I	—	—	Oscillation circuit input.
10	OSC2	OSC OUT	O	—	—	Oscillation circuit output.
11	GND	GND	—	—	—	GND for digital circuit.
12	R30/AN0	VR. DOWN	O	H	L	At volume down, output signal.
13	R31/AN1	VR. UP	O	H	L	At volume up, output signal.
14	R32/AN2	POWER	O	H	L	Control signal of IC101 (±15V), IC301/302 (MUTE).
15	R33/AN3	SPK RELAY	O	L	H	ON/OFF control signal of speaker relay.
16	VCC	5V	—	—	—	+5V power supply for digital circuit.
17	TEST/VPP	NC	—	—	—	Fix to GND.
18	RESET	RESET	I	—	L	Reset input signal.
19	R00/SCK	SCK	O	H	L	DENON bus communication data clock signal.
20	R01/SI	SI	I	H	—	DENON bus communication data input signal.
21	R02/SO	SO	O	H	—	DENON bus communication data output signal.
22	R03/TOC	MUTE	O	L	H	MUTE output signal.
23	D0/INT0/EVNB	REMOCON	I	H	L	Remote control input signal.
24	D1	POWER. LED	O	H	L	LED "POWER" indication signal. ON at "L"
25	D2	CD. LED	O	H	L	LED "CD" indication signal. ON at "L"
26	D3	POWER OFF	I	H	L	Power OFF input signal.
27	D4/STOPC	PROTECT	I	L	H	Over flow current detection input signal.
28	D5	FUNC. SW	I	H	L	Function switch signal.

MICROPROCESSOR PERIPHERAL WIRING DIAGRAM


1
2
3
4
A
B
C
D
E
D608
DVD/AUX
D607
MD
D606
PHONO
D605
TUNER
D604
TAPE
IC601
HD404344B46S
1 TAPE.LED
2 TUNER.LED
3 PHONO.LED
4 MD.LED
5 CLOCK
6 DATA
7 ST
8 DVD/AUX.LED
9 OSC1
10 OSC2
11 GND
12 VR.DOWN
13 VR.UP
14 POWER
28 FUNC.S/W
27 PROTECT
26 POWER.OFF
25 CD.LED
24 POWER.LED
23 REMOCON
22 MUTE
21 SO
20 SI
19 SCK
18 RESET
17 TEST
16 Vcc
15 SPK.RLY
X601
4MHz
R613
1M
R609
47K
R611
270
R610
220
D603
CD
D602
POWER
+5V
FUNCTION S/W
SW601
RK16Y12S
R612
47K


2
3
4
5
6
7
8
CAUTION: REPLACE WITH SAME TYPE IC PROTECTOR CATALOG NO. ICP-N15 OR ICP-F15.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE. DE IC PROTECTOR CATALOG NO ICP-N15 OR ICP-F15.
702002103001-00 MAIN PCB
702002103001-00 VOLUME PCB
702002103001-00 POWER PCB
702002103001-00 AMP PCB
702002103001-00 HEAD PHONE PCB
702002103001-00 FUNCTION PCB
DM2-V-O DMC
UPA-F88 MAIN PCB
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACE ONLY WITH SAME TYPE FUSE
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE
F502 T1.25A L 250V
F501 T1.25A L 250V
SW501
CN501
CN502
CN503
COLD
HOT
ANGLE
STRAIGHT
JACK101
JACK102
JACK103
JACK104
JACK105
JACK701
JACK201
JACK202
CN201
CN202
CN601
CN701
CN401
JP201
JP202
JP701
IC101
IC102
IC103
IC104
IC201
IC202
IC203
IC301
IC302
IC401
Q106
K101
AUTO
F1
TYPE
EYE
A/T
JIG
MUTE
CLK
DATA
+5V
GND
VCC
POWER
POWER OFF PROTECT
SP.RLY
RED
WHT
R
L



Pattern Side

1
2
3
4
5
6
7
8
A
B
C
D
E
AMP PCB
MAIN PCB
VOLUME PCB
POWER PCB
HEAD PHONE PCB
FUNCTION PCB
CN201
CN202
CN402
CN101
CN601
CN505
CN701
CN501
CN502
CN503
CN504
CN401
IC301
IC302
IC101
IC401
IC201
IC202
IC203
JP201
JP202
JP401
JP402
JP504
JP701
JACK101
JACK102
JACK103
JACK104
JACK105
JACK201
JACK202
JACK701
SW501
F501
F502
VR401
RED
WHT
TAPE PLAY
TAPE REC
MD PLAY
MD REC
DVD/ AUX
TUNER
CD
PHONO
COLD
HOT
GND101
K101
MUTE
CLK
DATA
ST
SCK
SO
POWER
GND
POWER OFF
PROTECT
SPRLY
-B
+B
OVER
RO
LO
MD REC L
TAPE REC L
MD PLAY L
TAPE PLAY L
MD REC R
TAPE REC R
MD PLAY R
TAPE PLAY R

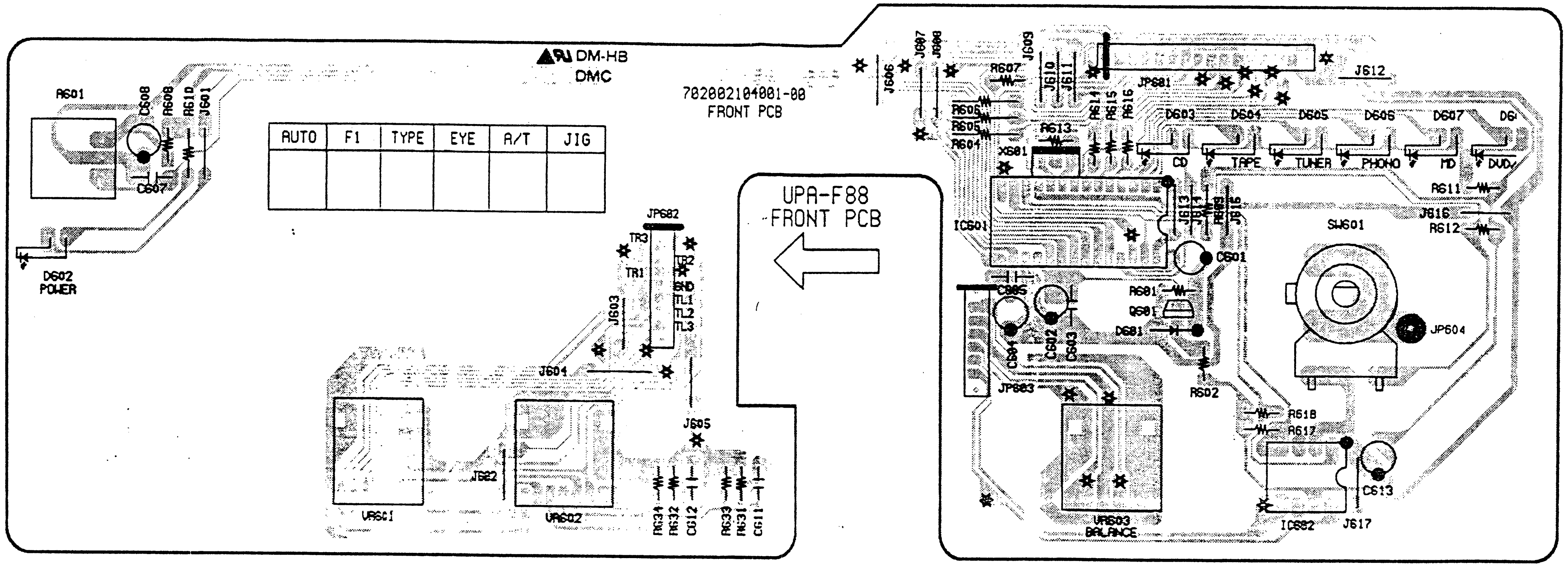
AMPLIFIER SECTION

1 2 3 4 5 6 7 8

A B C D E

FRONT UNIT ASS'Y

Component Side


DM-HB
DMC
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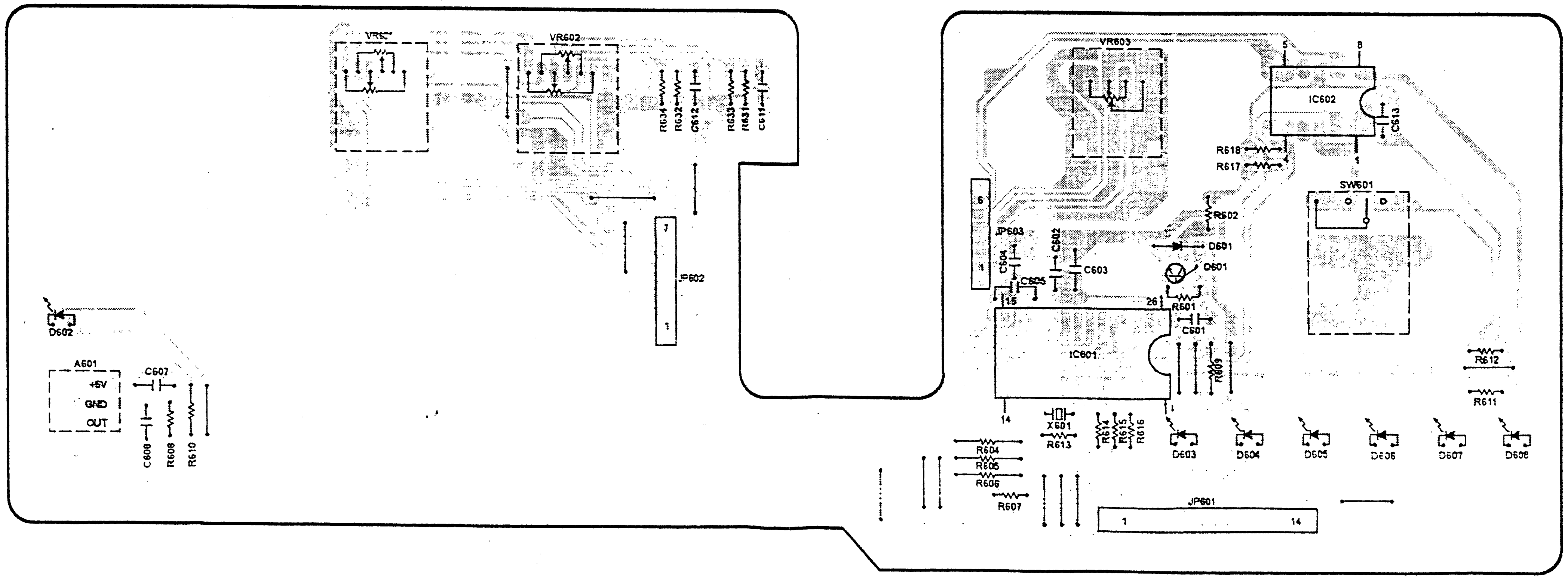
FRONT PCB
A601
C608
R608
R610
J601
C607
D602
POWER
AUTO
F1
TYPE
EYE
A/T
JIG
JP682
TR3
TR1
TR2
GND
TL1
TL2
TL3
J603
J604
J605
J682
VR601
VR602
R634
R632
C612
R633
R631
C611
UPA-F88
FRONT PCB
J606
J607
J608
J609
R607
J610
J611
JP601
J612
R606
R605
R604
X601
R613
R614
R615
R616
D603
D604
D605
D606
D607
CD
TAPE
TUNER
PHONO
MD
DVD
R611
J613
J614
J615
J616
R612
IC601
SW601
C601
C605
R601
Q601
D601
C604
C602
C603
JP603
JP604
R602
R618
R617
VR603
BALANCE
IC602
J617
C613

Pattern Side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VR602
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R632
C612
R633
R631
C611
JP602
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1
D602
A601
+5V
GND
OUT
C607
C608
R608
R610
VR603
5
8
IC602
C613
R618
R617
1
SW601
R602
JP603
6
1
C604
C602
C603
D601
Q601
C605
15
26
R601
C601
IC601
R603
14
1
X601
R613
R614
R615
R616
D603
D604
D605
D606
D607
D608
R612
R611
R604
R605
R606
R607
JP601
1
14

NOTE FOR PARTS'LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: RN 14K 2E 182 G FR

Type	Shape and performance	Power	Resistance	Allowable error	Others
RN	14K	2E	182	G	FR

RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-buming type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

*** Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
2 — Indicates number of zeros after effective number.
1 8 — 2-digit effective number.

- Units: ohm

1 R 2 ⇒ 1.2 ohm
2 — 1-digit effective number.
1 R — 2-digit effective number, decimal point indicated by R.

- Units: ohm

● Capacitors

Ex.: CE 04W 1H 2R2 M BP

Type	Shape and performance	Dielectric strength	Capacity	Allowable error	Others
CE	04W	1H	2R2	M	BP

CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For change and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80% −20%	U : UL part
CP : Oil	2A : 100V		C : CSA part
CM : Mica	2B : 125V	P : +100% −0%	W : UL-CSA type
CF : Metallized	2C : 160V		F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

*** Capacity (electrolyte only)**

2 2 2 ⇒ 2200µF
2 — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: µF.

2 R 2 ⇒ 2.2µF
2 — 1-digit effective number.
2 R — 2-digit effective number, decimal point indicated by R.

- Units: µF.

*** Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF=0.0022µF
2 — (More than 2) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: µF.

2 2 1 ⇒ 220pF
1 — (0 or 1) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: pF.

- When the dielectric strength is indicated in AC, "AC" is included after the dieelectric strength value.

AMPLIFIER SECTION

PARTS LIST OF P.W.B. UNIT ASS'Y

MAIN UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	263 0646 007	IC M5230L	
⚠IC102~104	268 0073 905	IC ICP-N15	
IC201	960 0013 100	IC NJM4565DD	
IC202	960 0080 201	IC KIC9164AN	
IC203	960 0013 100	IC NJM4565DD	
IC301,302	263 0206 007	IC µPC1225H	
IC401	960 0013 100	IC NJM4565DD	
IC602	263 0476 002	IC LB1639	
Q101	269 0040 009	Transistor DTC144ES	
Q102	269 0093 904	Transistor DTA144ES	
Q103	271 0192 002	Transistor 2SA933S	
Q104,105	273 0303 907	Transistor 2SC1740SR	
Q106	960 0004 902	Transistor KTD2058Y	
Q107	273 0303 907	Transistor 2SC1740SR	
Q108	269 0063 905	Transistor DTA124ES	
Q109,112	960 0004 805	Transistor KTB1366Y	
Q110	960 0004 902	Transistor KTD2058Y	
Q111	273 0303 907	Transistor 2SC1740SR	
Q113	960 0004 902	Transistor KTD2058Y	
Q114	269 0040 009	Transistor DTC144ES	
Q115	269 0093 904	Transistor DTA144ES	
Q116	271 0192 002	Transistor 2SA933S	
Q117,118	273 0303 907	Transistor 2SC1740SR	
Q119	271 0192 002	Transistor 2SA933S	
Q120	273 0303 907	Transistor 2SC1740SR	
Q121	269 0020 906	Transistor DTC114ES	
Q301,302	273 0388 906	Transistor 2SC1740SE	
⚠Q303,304	960 0000 304	Transistor 2SC4467P	
⚠Q305,306	960 0000 207	Transistor 2SA1694P	
Q307,308	273 0207 003	Transistor KSC1845F	
Q401,402	273 0303 907	Transistor 2SC1740SR	
Q403,404	960 0080 308	Transistor KTC2878	
D101~109	960 0031 409	Diode 1SS131	
⚠D110	960 0039 508	Diode D3SB20	
D111~113	960 0068 401	Diode 1N4002A	
D114	960 0031 409	Diode 1SS131	
D201~206	960 0031 409	Diode 1SS131	
D301~306	960 0031 409	Diode 1SS131	
D601	960 0031 409	Diode 1SS131	
D602~608	960 0002 001	LED SLR34DC3	

Ref. No.	Part No.	Part Name	Remarks
ZD101~103	9H3 0000 509	Zener diode MTZJ6.2B	
ZD104~107	960 0037 209	Zener diode MTZJ13B	
RESISTORS GROUP			
⚠R173	244 0038 009	Metal oxide 560 ohm 1W	RS14B3A561J Europe model
⚠R173	244 0040 026	Metal oxide 820 ohm 1W	RS14B3A821J Asia model
⚠R179,180	244 2043 937	Metal oxide 10 ohm 1W	RS14B3A100J
⚠R181,182	244 0038 009	Metal oxide 560 ohm 1W	RS14B3A561J
⚠R319,320	243 2026 032	Cement resistor 0.22 ohm 3W	RW99=3FR22K
CAPACITORS GROUP			
C101~108	253 1191 981	Ceramic 56pF/50V	CK14SL1H560J
C109	254 4260 058	Electrolytic 2.2µF/50V	CE04W1H2R2M
C110	HMA 1000 159	Ceramic 100pF/50V	CK14B1H101K
C111,112	253 1194 959	Ceramic 1000pF/50V	CK14B1H102K
C113	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M
C114	254 4254 019	Electrolytic 22µF/16V	CE04W1C220M
C115	254 4260 061	Electrolytic 3.3µF/50V	CE04W1H3R3M
C116	254 4127 007	Electrolytic 220µF/6.3V	CE04W0J221
C117	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K
C118,119	254 4256 046	Electrolytic 100µF/25V	CE04W1E101M
C120	254 4260 045	Electrolytic 1µF/50V	CE04W1H010M
C121	255 1251 940	Mylar film 4700pF/50V	CQ92M1H472J
C123,124	254 4355 002	Electrolytic 6800µF/50V	CE68W1H682MDL
⚠C125,126	960 9001 100	Ceramic 0.01µF/500V	CK45F2H103Z
C127,128	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K
C137	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M
C138	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K
C139	254 4250 042	Electrolytic 330µF/6.3V	CE04W0J331M
C141~144	255 1251 940	Mylar film 0.047µF/50V	CQ92M1H473J
C145~148	257 0009 966	Ceramic chip 4700pF/50V	CK73B1H472K
C201,202	253 3617 007	Ceramic chip 39pF/50V	CC45SL1H390J
C203,204	253 1193 976	Ceramic 220pF/50V	CK14B1H221K
C205,206	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K
C207,208	254 4252 037	Electrolytic 100µF/10V	CE04W1A101M
C209,210	253 1194 959	Ceramic 1000pF/50V	CK14B1H102K
C211,212	255 4223 933	Mylar film 0.012µF/50V	CQ92M1H123J
C213,214	255 4222 963	Mylar film 3300pF/50V	CQ92M1H332J
C215,216	254 4260 058	Electrolytic 2.2µF/50V	CE04W1H2R2M
C217~220	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M
C221	253 1194 959	Ceramic 1000pF/50V	CK14B1H102K
C222,223	HMA 1000 159	Ceramic 100pF/50V	CK14B1H101K
C224	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M
C225~228	254 4260 045	Electrolytic 1µF/50V	CE04W1H010M
C231~236	257 0004 903	Ceramic chip 56pF/50V	CC73SL1H560J
C301,302	253 1193 976	Ceramic 220pF/50V	CK14B1H221K
C303,304	HMA 1000 159	Ceramic 100pF/50V	CK14B1H101K

Ref. No.	Part No.	Part Name	Remarks	
C305,306	253 1189 980	Ceramic 4.7pF/50V	CK14SL1H4R7K	
C307,308	254 4252 037	Electrolytic 100µF/10V	CE04W1A101M	
C309,310	257 0012 021	Ceramic 2200pF/50V	CK73F1H222Z	
C311,312	253 1179 974	Ceramic 39pF/50V	CK45B1H391K	
C313,314	254 4261 918	Electrolytic 47µF/50V	CE04W1H470M	
⚠C315,316	253 1126 901	Ceramic 150pF/500V	CK45B2H151K	
C317,318	255 1138 005	Mylar film 0.033µF/50V	CQ92M1H333J	
C319,320	253 1025 002	Ceramic 0.022µF/50V	CK45H1H223Z	
C325~328	254 4260 045	Electrolytic 1µF/50V	CE04W1H010M	
C401,402	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K	
C403,404	255 1121 067	Mylar film 0.022µF/50V	CQ93M1H223J	
C407,408	254 4260 061	Electrolytic 3.3µF/50V	CE04W1H3R3M	
C409,410	253 1193 976	Ceramic 220pF/50V	CK14B1H221K	
C411,412	253 1194 959	Ceramic 1000pF/50V	CK14B1H102K	
C413,414	254 4260 074	Electrolytic 4.7µF/50V	CE04W1H4R7M	
C415,416	HMA 1000 159	Ceramic 100pF/50V	CK14B1H101K	
C419	255 1134 025	Mylar film 0.01µF/50V	CQ92M1H103J	
⚠C501	253 8001 100	Ceramic 4700pF/250V	CK45F2EAC472Z	
OTHER PARTS GROUP				
CN101	—	9P Connector base	L10135336091	1
CN101	960 0000 605	9P FP cable	L13206091001	1
CN201	—	9P Connector base	L10135336091	1
CN202	—	7P Connector base	L10135336071	1
CN401	—	6P Wire trap	L14152147061	1
CN402	—	3P Connector base	L10252680301	1
⚠CN502	—	2P Connector base	L10803960201	1
⚠CN503	—	2P Connector base	L10803960302	1
CN504	—	Connector base	L10205100002	1
CN505	—	3P Connector base	L10439603001	1
CN601	—	14P Wire trap	L14152147141	1
CN602	—	7P Wire trap	L14152147071	1
CN603	—	6P Wire trap	L14152147061	1
CN701	—	7P FP cable	L13206071001	1
⚠F501	960 0005 707	Fuse 125V 3A	G65030212101	1
GND101	960 0036 909	Earth terminal	379000012000	1
J101~114	—	Junper wire	L40200002002	14
J117~154	—	Junper wire	L40200001002	38
J201~216	—	Junper wire	L40200002002	16
J301~329	—	Junper wire	L40200002002	29
J401~405	—	Junper wire	L40200002002	5
JACK101,102	960 0004 504	4P Pin jack	G60204004500	2

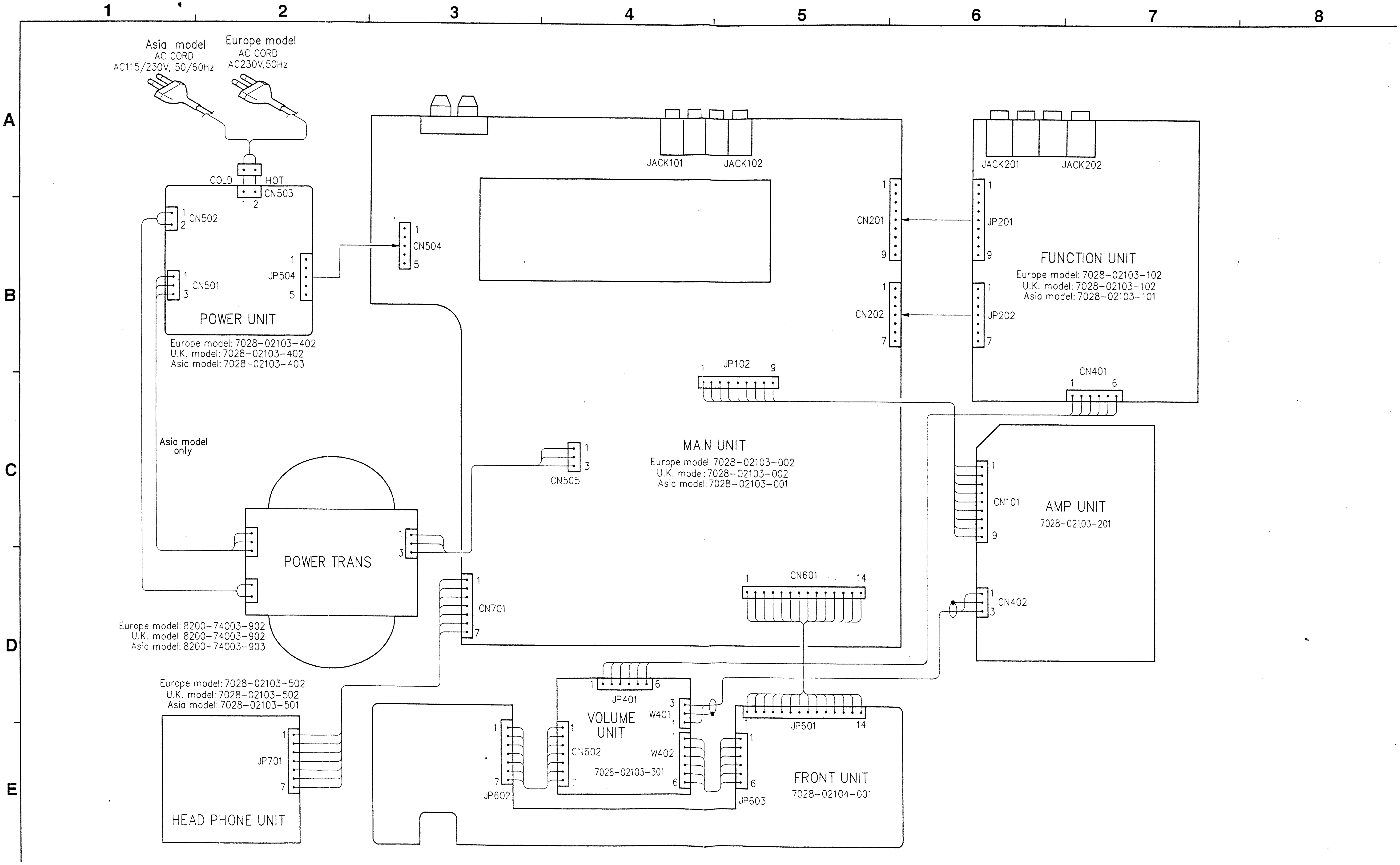
Ref. No.	Part No.	Part Name	Remarks	Q'ty
JACK103,104	960 0004 407	Mini jack 3.5 ϕ	G40103110201	2
JACK105	960 0004 601	4PSpeaker terminal	G61204204020	1
JACK201,202	960 0004 504	4P Pin jack	G60204004500	2
JACK701	960 0002 904	Headphone jack	G40220780060	1
JP101	—	9P cable holder	L11251052090	1
JP101	—	9P Flat cable 130mm (BK)	L13013109241	1
JP201	—	9P Connector base	L10135237091	1
JP202	—	7P Connector base	L10135237071	1
JP401	—	6P cable holder	L11151048061	1
JP401	—	6P Flat cable 200mm (BK)	L32120106260	1
JP402	—	3P connector wire	L00007595002	1
JP504	—	Connector base	L10205100003	1
JP601	—	14P cable holder	L11151048141	1
JP601	—	14P Flat cable 130mm	L32113114260	1
JP602	—	7P cable holder	L11151048071	1
JP602	—	7P Flat cable 110mm	L32111107261	1
JP603	—	6P cable holder	L11151048061	1
JP603	—	6P Flat cable 160mm	L32116106260	1
JP701	—	7P cable holder	L11251052070	1
JP701	—	7P Flat cable 100mm (BK)	L32010107241	1
K101	960 0008 104	Relay	G68024302002	1
L101,102	960 0005 008	Inductor 0.15µH	D330R1500000	2
	—	Heat sink	212000065001	1
	—	Heat sink	212002002801	3
	960 0005 804	Fuse crip	550702000003	2

FRONT P.W.B. UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks	Q'ty
SEMICONDUCTORS GROUP				
IC601	960 0080 900	IC HD404344A		
Q601	273 0303 907	Transistor 2SC1740SR		
A601	960 0080 706	Remocon module	E94046020002	
RESISTORS GROUP				
VR401	960 0049 909	Variable resistor 100 kohm	VOLUME	
VR601,602	960 0080 609	Variable resistor 100 kohm	BASS,TRBLE	
VR603	960 0080 502	Variable resistor 200 kohm	BALANCE	
CAPACITORS GROUP				
C601,602	254 4260 045	Electrolytic 1µF/50V	CE04W1H010M	
C603	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M	
C604	254 4252 037	Electrolytic 100µF/10V	CE04W1A101M	
C605	AVC 7700 133	Ceramic 0.01µF/16V	CK14Y1C103M	
C607	253 1194 917	Ceramic 470pF/50V	CK14B1H471K	
C608	254 4252 037	Electrolytic 100µF/10V	CE04W1A101M	
C611,612	255 1022 001	Mylar film 0.056µF/50V	CQ92M1H563K	
C613	254 4260 087	Electrolytic 10µF/50V	CE04W1H101K	
C701,702	253 1193 976	Ceramic chip 220pF/50V	CC73SL1H221J	
OTHER PARTS GROUP				
JP601	—	14P cable holder	L11151048141	1
JP601	—	14P Flat cable 130mm	L32113114260	1
JP602	—	7P cable holder	L11151048071	1
JP602	—	7P Flat cable 110mm	L32111107261	1
JP603	—	6P cable holder	L11151048061	1
JP603	—	6P Flat cable 160mm	L32116106260	1
JP701	—	7P cable holder	L11251052070	1
JP701	—	7P Flat cable 100mm (BK)	L32010107241	1
⚠SW501	960 0080 405	Push switch	G00012200702	1
SW601	960 0080 803	Rotary switch	G12016120001	1
X601	399 0191 903	Ceramic resonator CST4.00MGW	E8304R000001	1
J601~617	—	Junper wire	L40200002002	17

AMPLIFIER SECTION

WIRING DIAGRAM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2
3
4
5
6
7
8
A
B
C
D
E
Asia model
AC CORD
AC115/230V, 50/60Hz
Europe model
AC CORD
AC230V,50Hz
COLD
HOT
CN503
1 2
CN502
CN501
JP504
POWER UNIT
Europe model: 7028-02103-402
U.K. model: 7028-02103-402
Asia model: 7028-02103-403
CN504
JACK101
JACK102
CN201
CN202
JP102
MAIN UNIT
Europe model: 7028-02103-002
U.K. model: 7028-02103-002
Asia model: 7028-02103-001
CN505
CN601
CN701
JACK201
JACK202
JP201
JP202
FUNCTION UNIT
Europe model: 7028-02103-102
U.K. model: 7028-02103-102
Asia model: 7028-02103-101
CN401
CN101
AMP UNIT
7028-02103-201
CN402
Asia model only
POWER TRANS
Europe model: 8200-74003-902
U.K. model: 8200-74003-902
Asia model: 8200-74003-903
Europe model: 7028-02103-502
U.K. model: 7028-02103-502
Asia model: 7028-02103-501
JP701
HEAD PHONE UNIT
JP602
JP401
VOLUME UNIT
CN602
7028-02103-301
W401
W402
JP601
JP603
FRONT UNIT
7028-02104-001

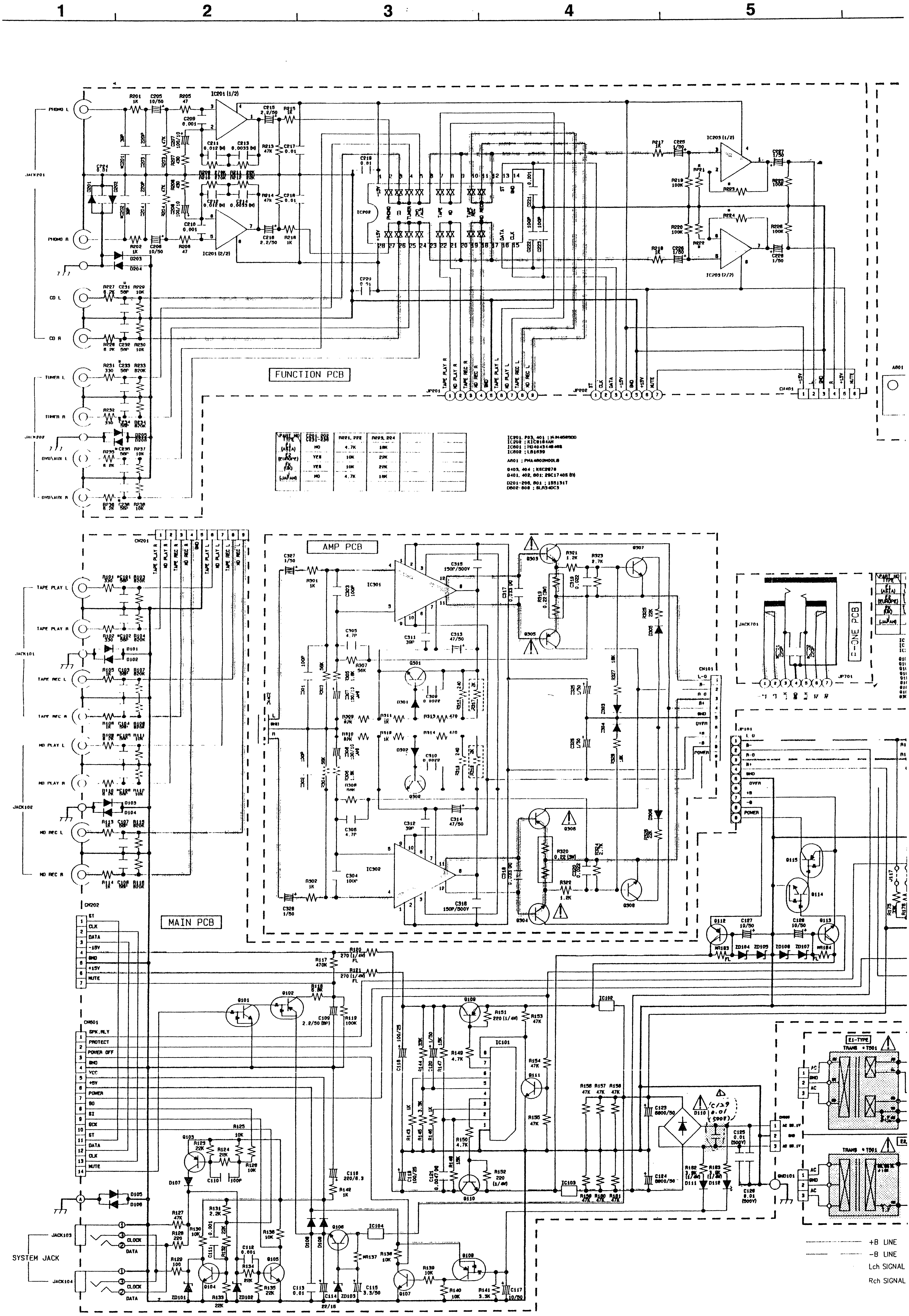
AMPLIFIER

SCHEMATIC DIAGRAM

PARTS

PRE-M

Ref. N


1
2
3
4
5
FUNCTION PCB
AMP PCB
MAIN PCB
PHONO L
PHONO R
CD L
CD R
TUNER L
TUNER R
DVD\AUX L
DVD\AUX R
JACK201
JACK202
TAPE PLAY L
TAPE PLAY R
TAPE REC L
TAPE REC R
MD PLAY L
MD PLAY R
MD REC L
MD REC R
JACK101
JACK102
IC201 (1/2)
IC201 (2/2)
IC202
IC203 (1/2)
IC203 (2/2)
IC301
IC302
IC101
IC102
IC103
IC104
JP201
JP202
JP701
CN101
CN201
CN202
CN401
CN601
A801
E-ONE PCB
SYSTEM JACK
JACK103
JACK104
CLOCK
DATA
EI-TYPE
TRANS T801
+B LINE
-B LINE
Lch SIGNAL
Rch SIGNAL

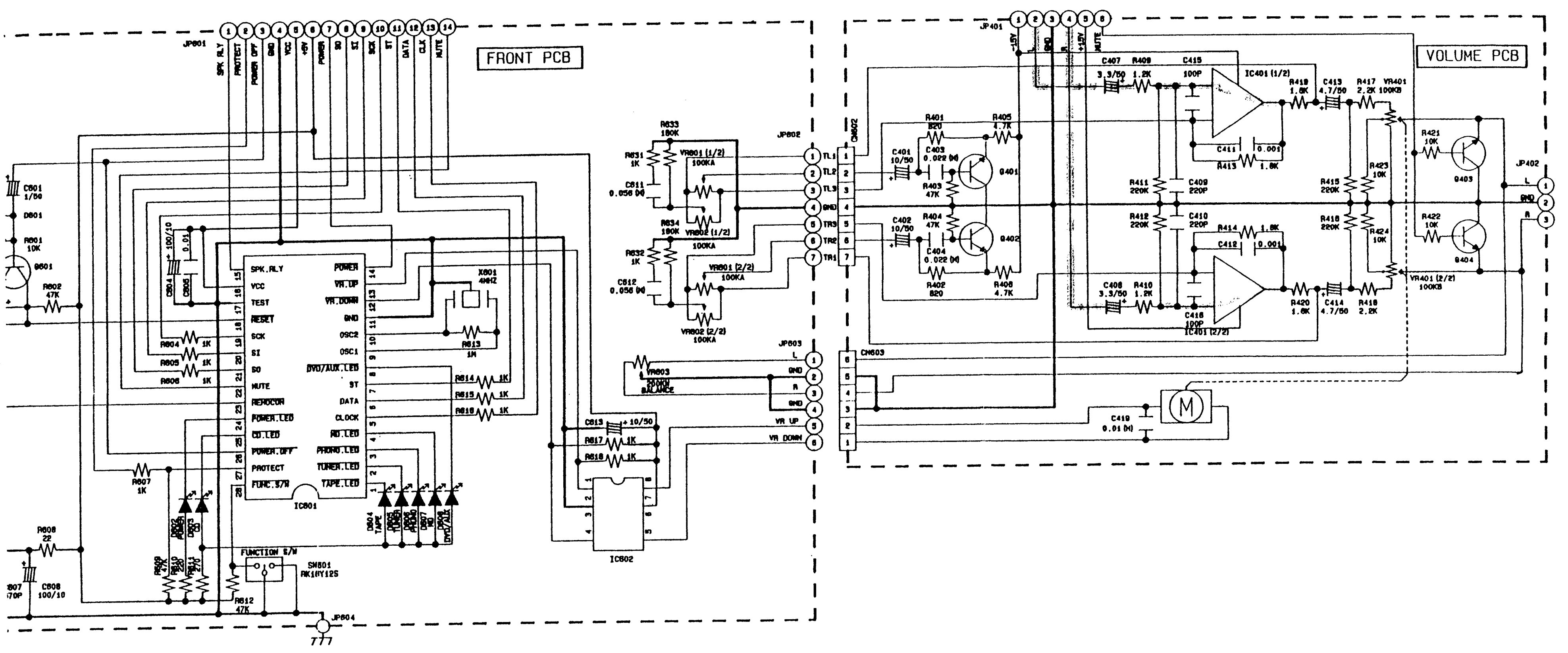
PART NO TYPE	C201, 202 C231~238	R221, 222	R223, 224		
E1 (ASIA)	NO	4.7K	18K		
E2 (EUROPE)	YES	10K	22K		
EK (UK)	YES	10K	22K		
J (JAPAN)	NO	4.7K	18K		

IC201, 203, 401 : NJM4580DD
IC202 : KIC9164AN
IC601 : HD404344B408
IC602 : LB1639

A801 : PNA4602M00LB

Q403, 404 : KSC2070
Q401, 402, 601 : 2SC1740S (R)

D201-206, 801 : 1SS131T
D602-606 : SLR340C3


A
B
C
JP801
SPK.RLY
PROTECT
POWER OFF
GND
VCC
+5V
POWER
SO
SI
SCK
ST
DATA
CLK
MUTE
FRONT PCB
IC801
SPK.RLY
VCC
TEST
RESET
SCK
SI
SO
MUTE
REMOCON
POWER.LED
CD.LED
POWER.OFF
PROTECT
FUNC.S/W
POWER
VR.UP
VR.DOWN
GND
OSC2
OSC1
DVD/AUX.LED
ST
DATA
CLOCK
MD.LED
PHONO.LED
TUNER.LED
TAPE.LED
X801 4MHZ
R813 1M
R804 1K
R805 1K
R806 1K
R814 1K
R815 1K
R816 1K
R807 1K
R808 22
C808 100/10
C801 1/50
D801
R801 10K
Q801
R802 47K
C804 100/10
C805 0.01
R809
R810
R811 270
FUNCTION S/W
SW801 RK10Y12S
R812 47K
JP804
JP802
R833 180K
R831 1K
VR801 (1/2) 100KA
C811 0.056 (M)
R834 180K
VR802 (1/2) 100KA
R832 1K
VR801 (2/2) 100KA
C812 0.056 (M)
VR802 (2/2) 100KA
TL1
TL2
TL3
GND
TR3
TR2
TR1
JP803
VR803 20KBX BALANCE
L
GND
R
VR UP
VR DOWN
C813 10/50
R817 1K
R818 1K
IC802
CN602
CN603
JP401
-15V
GND
R
L
+15V
MUTE
VOLUME PCB
C407 3.3/50
R409 1.2K
C415 100P
IC401 (1/2)
R419 1.8K
C413 4.7/50
R417 2.2K
VR401 100KB
R401 820
R405 4.7K
C401 10/50
C403 0.022 (M)
R403 47K
Q401
C411 0.001
R413 1.8K
R411 220K
C409 220P
R415 220K
R423 10K
R421 10K
Q403
JP402
L
GND
R
C402 10/50
R404 47K
C404 0.022 (M)
Q402
R412 220K
C410 220P
R414 1.8K
C412 0.001
R416 220K
R424 10K
R422 10K
Q404
VR401 (2/2) 100KB
R402 820
R406 4.7K
C408 3.3/50
R410 1.2K
C416 100P
IC401 (2/2)
R420 1.8K
C414 4.7/50
R418 2.2K
M
C419 0.01 (M)

SW502	T501	R137	[illegible]	R173	[illegible]	[illegible]	[illegible]	[illegible]	CN501
YES	74003-903	10K (1/4W)	2.2K (1/2W)	820 (1W)	J115 J116	0.022 (M)	NO	16V	YES
NO	74003-902	4.7K (1/4W)	1.5K (1/2W)	680 (1W)	0.047 (M)	0.047 (M)	YES	13V	NO
NO	74003-902	4.7K (1/4W)	1.5K (1/2W)	680 (1W)	0.047 (M)	0.047 (M)	YES	13V	NO
NO	74003-901	10K (1/4W)	2.2K (1/2W)	820 (1W)	J115 J116	0.022 (M)	NO	16V	NO

N15/ICP-F15
225H

4ES
4ES
SA0336 (R)
1, 117, 118, 120 ; 2SC1740S (R)

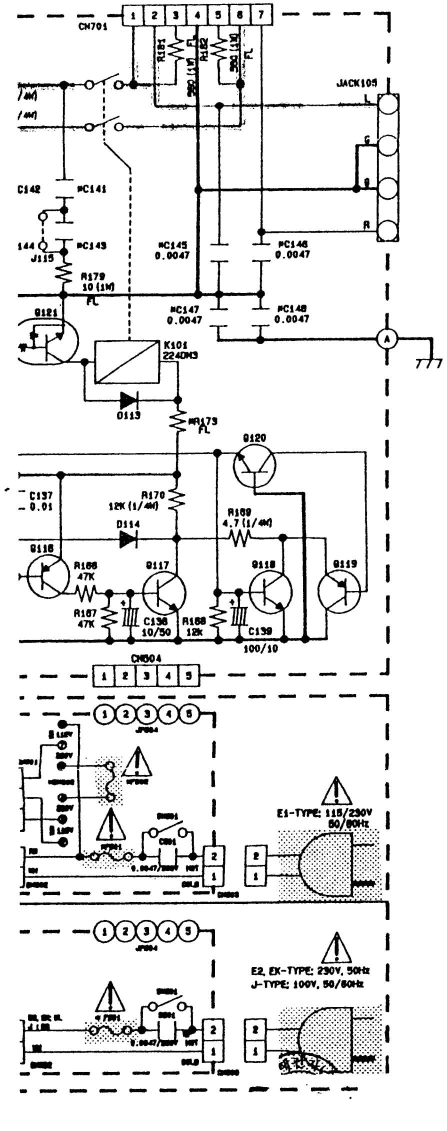
TD2058 (Y)

88 (Y)
405 (E)

Q303, 304 ; 2SC4467 (O, P, Y)
Q305, 306 ; 2SA1694 (O, P, Y)
Q307, 308 ; KSC1845F

D101-109, 114, 301-308 ; 1SS131T
D110 ; 08F40C/D3S820
D111-113 ; 1N4002

ZD101-103 ; MTZJ6.2B
ZD104, 107 ; MTZJ13B


LJ
GJ
L.H
GND
R.H
RJ
RO
CN701
R181
390 (1/4W)
FL
R182
390 (1/4W)
FL
JACK105
L
G
R
C142
C141
J115
C143
R179 10 (1W) FL
C145 0.0047
C146 0.0047
C147 0.0047
C148 0.0047
Q121
K101 224DM3
D113
R173 FL
Q120
C137 0.01
R170 12K (1/4W)
D114
R169 4.7 (1/4W)
Q116
R166 47K
Q117
Q118
Q119
R167 47K
C136 10/50
R168 12K
C139 100/10
CN504
1 2 3 4 5
JP504
E1-TYPE: 115/230V 50/60Hz
1 2 3 4 5
JP504
E2, EX-TYPE: 230V, 50Hz
J-TYPE: 100V, 50/60Hz

NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM

ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD

EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.

CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

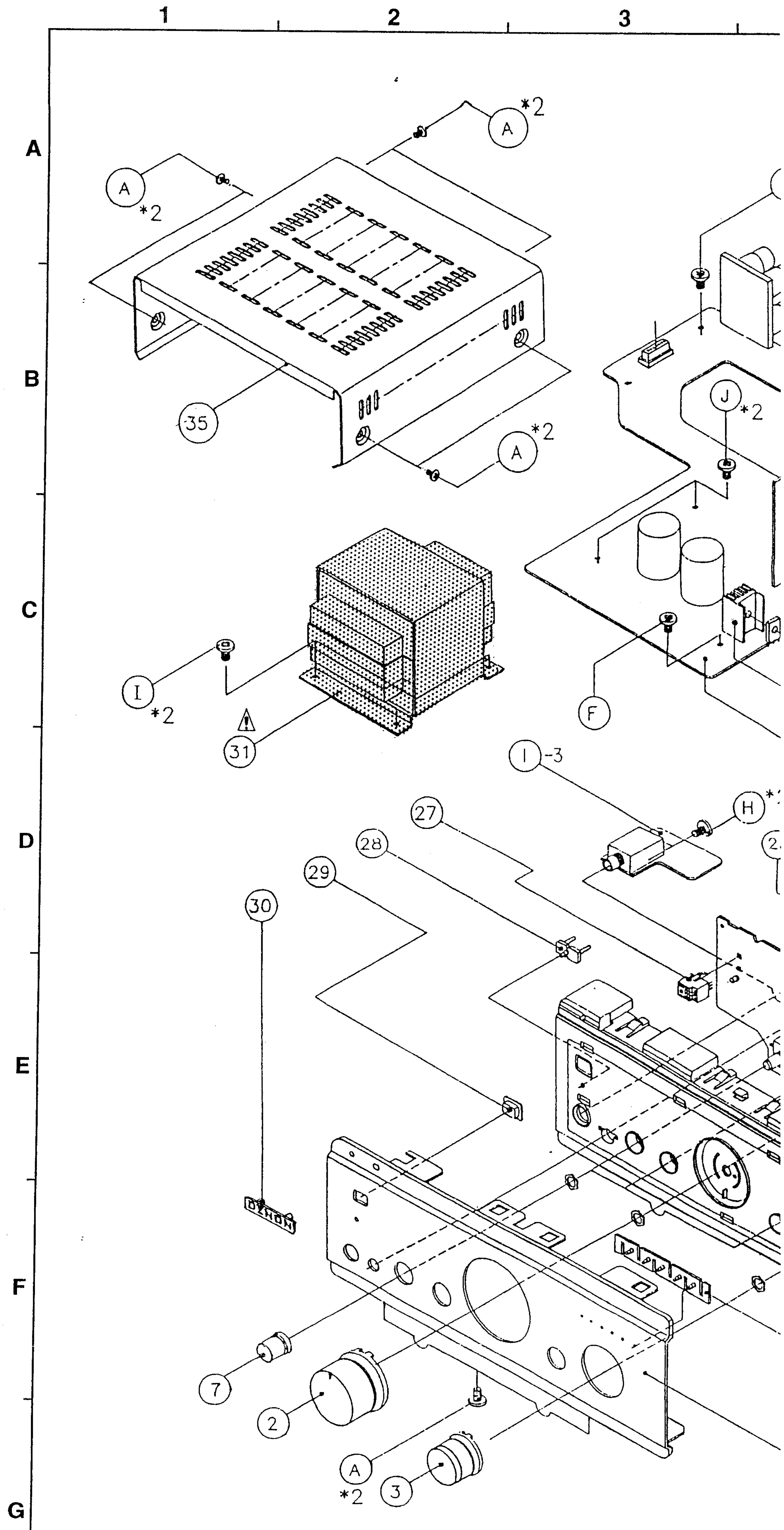
D
E
F
G
H

PARTS LIST OF EXPLODED VIEW

PRE-MAIN AMP SECTION(UPA-F88)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	Main P.W.B. unit		1s
1-1	—	Main P.W.B.unit	702802103001 Asia model	(1)
1-1	—	Main P.W.B.unit	702802103002 Europe and U.K.model	(1)
1-2	—	Volume P.W.B. unit	702802103301 Asia model	(1)
1-2	—	Volume P.W.B. unit	702802103302 Europe and U.K.model	(1)
1-3	—	Head phone P.W.B. unit	702802103501 Asia model	(1)
1-3	—	Head phone P.W.B. unit	702802103502 Europe and U.K.model	(1)
1-4	—	Power P.W.B. unit	702802103403 Asia model	(1)
1-4	—	Power P.W.B. unit	702802103402 Europe and U.K.model	(1)
1-5	—	Function P.W.B.unit	702802103101	(1)
1-6	—	AMP P.W.B. unit	702802103201	(1)
1-7	—	Front P.W.B. unit	702802104001	1
2	960 0078 802	Volume knob	508002097101	1
3	960 0078 909	Function knob	508002098101	1
4	960 0078 103	Front panel	306702088801	1
5	960 0078 404	Lens(Function)	371002023301	1
6	960 0078 200	Inner panel	321702014101	1
7	960 0079 005	Control knob	508702099101	3
9	960 0003 505	Foot cushion	405002007501	4
10	960 0003 408	Front foot	400700006101	2
11	960 0077 900	Chassis	320002053601 Europe and U.K.model	1
11	960 0077 913	Chassis	320002053602 Asia model	1
12	960 0003 301	P.W.B. Holder	407000160101	2
13	960 0003 204	Rear foot	400000060101	2
14	960 0078 624	Rear panel	320702006612 Europe and U.K.model	1
14	960 0078 611	Rear panel	320702006611 Asia model	1
⚠ 15	960 0078 006	AC Cord	L06100041001	1
⚠ 16	960 0003 802	Cord bush	438000018000	1
17	—	Heat sink	212002001801	1
18	—	Braket P.C.B. unit	401002005601	2
20	960 0000 401	Braket	401002078601	1
⚠ 21	960 0037 403	Voltage selector	G06000100001 Asia model only	1
22	—	Heat sink sub	212000065001	1
23	960 0078 705	Power holder	432002041101	1
25	960 0079 102	Power button	508702100101	1
27	960 0081 106	Holder sensor	432002042101	1
28	960 0078 307	Lens(Power)	371002022301	1
29	960 0078 501	Remocon window	507002040301	1
30	—	DENON Badge	563000042801	1
⚠ 31	960 0081 116	Power trans	820074003903 Asia model	1
⚠ 31	960 0081 129	Power trans	820074003902 Europe model	1
33	—	Heat sink sub	212002002801	2
35	960 0000 702	Top cover	300002010601	1
SCREWS				
A	960 9000 208	Screw 3x8 Btite BK/BH	B020030083B1	22
B	960 9000 130	Screw 3x8 Btite BK/FH	B020030083F1	2
C	960 9000 169	Screw 4x8 Ctite ZNY/BH	B020940081B1	2
D	960 9000 143	Screw 3x12 Btite BK/BH	B020030123B1	3
E	960 9000 101	Tapping screw 3x8 NI/BH	B010330084B1	1
F	960 9000 114	Screw 3x8 Btite ZNY/BH	B020030081B1	9
G	960 9000 185	Screw 3x14 -Washer	B018230141H1	4
H	960 9000 198	Screw 3x8 -Washer	150000145601	2
I	960 9000 172	Screw 4x8 -Washer	B028940081B1	2
J	960 9000 156	Screw 3x17 Btite ZNY/BH	B020030171B1	2
K	960 9002 109	Screw 3x6 Btite ZNY/BH	B020030061B1	4
L	960 9002 109	Screw 3x6 Machin ZNY/BH	B000030061B1 Asia model only	2

EXPLODED VIEW

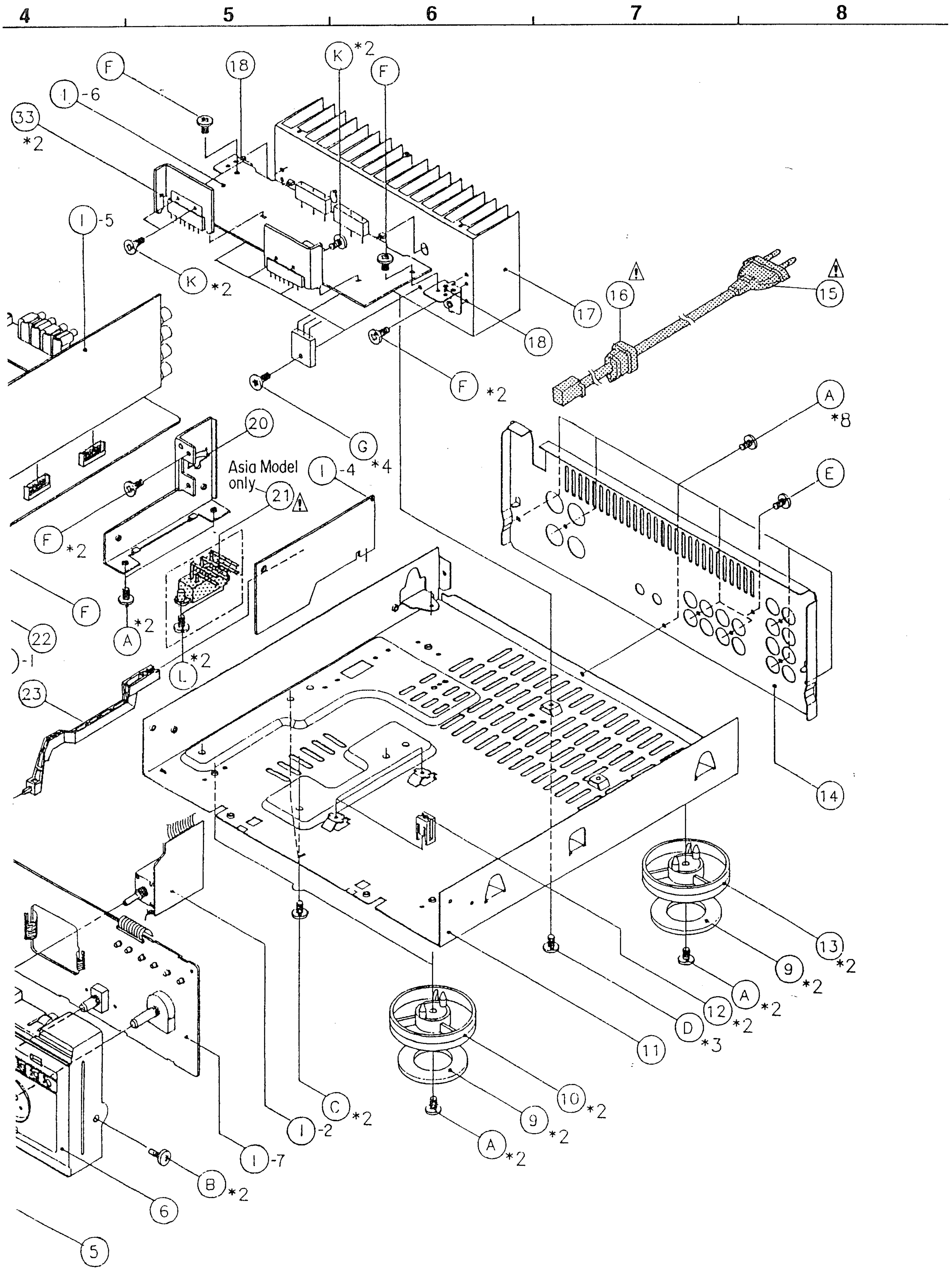


NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.



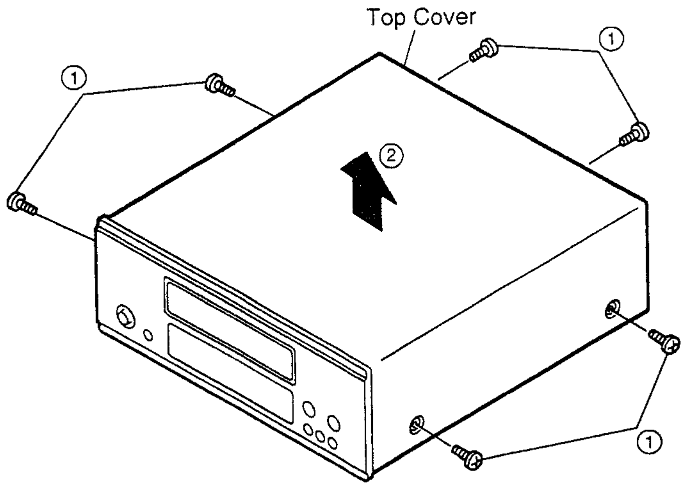
4
5
6
7
8
F
18
K *2
F
1 -6
33 *2
I -5
K *2
17
16
15
18
F *2
A *8
G *4
20
Asia Model only
21
I -4
E
F *2
F
A *2
22
)-1
L *2
23
14
13 *2
9 *2
A *2
12 *2
D *3
11
10 *2
9 *2
A *2
C *2
I -2
I -7
B *2
6
5

DISASSEMBLY PROCEDURES

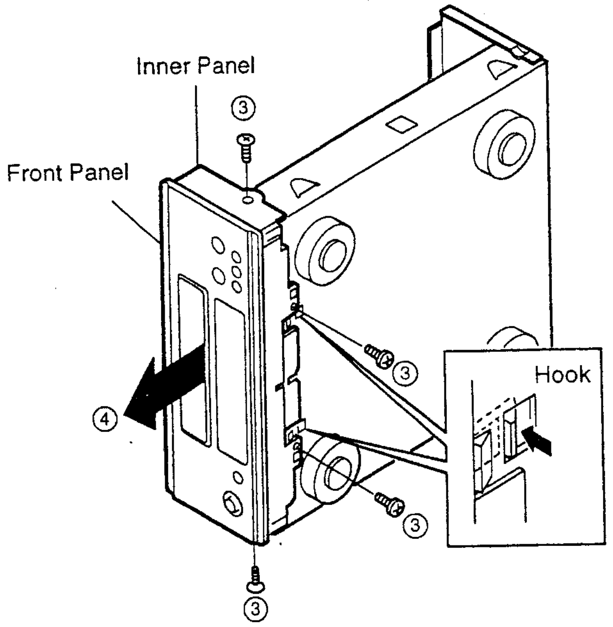
(Assembly is performed in the reverse order.)

1. Top Cover and Front Panel

① Remove 6 screws mounting on the Top Cover.
② Detach the Top Cover in the arrow direction.

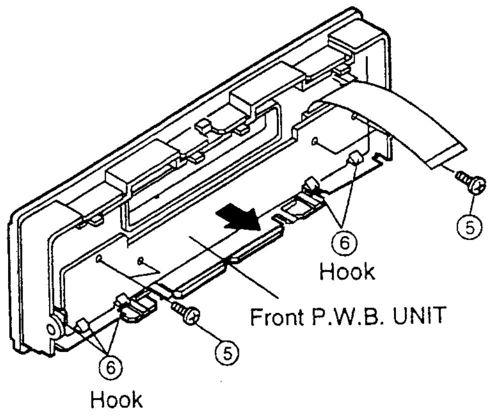

Top Cover
①
①
②
①

③ Remove 2 each screws fastening the Front Panel on the bottom and both side.
④ While releasing 2 Hooks of the Inner Panel from the chassis, pull toward arrow direction and detach the Front Panel and the Inner Panel as a whole.


Inner Panel
③
Front Panel
③
Hook
④
③
③

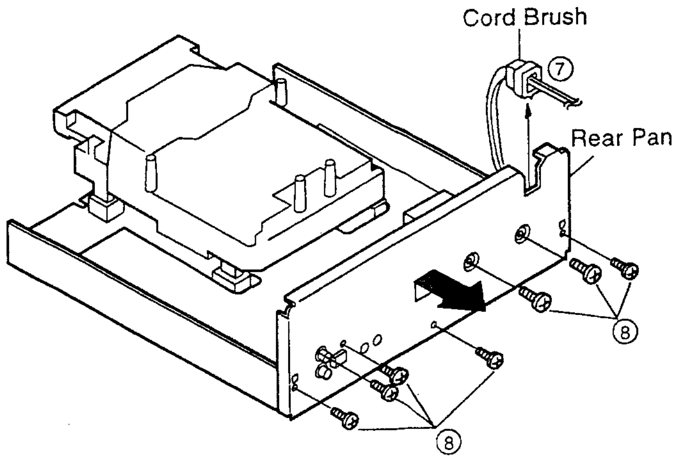
2. Front P.W.B. Unit

⑤ Remove 4 screws fastening Front P.W.B. Unit.
⑥ Release 5 Hooks and detach the Front P.W.B. Unit in the arrow direction.


⑤
⑥
Hook
Front P.W.B. UNIT
⑤
⑥
Hook

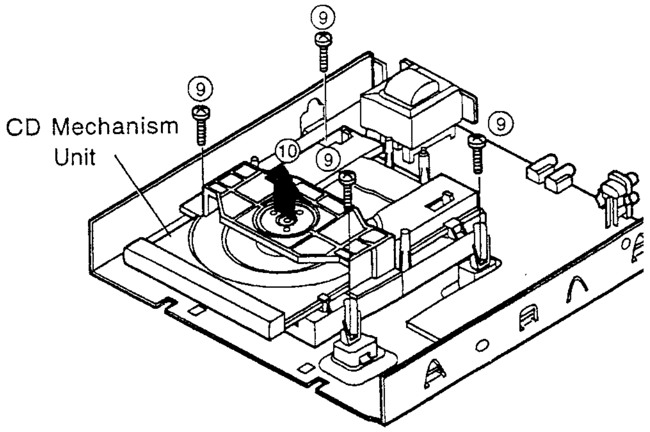
3. Rear Panel

⑦ Remove the Cord Bush from the Rear Panel.
⑧ Remove 7 screws (Europe model) /9 screws (Asia model) fixing the Rear Panel, then detach the RearPanel in the arrow direction.


Cord Brush
⑦
Rear Pan
⑧
⑧

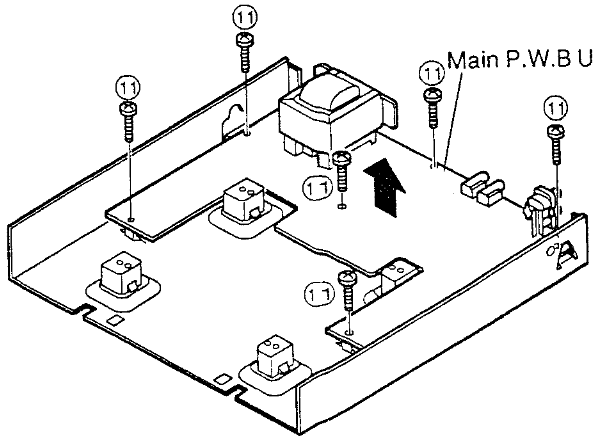
4. CD Mechanism Unit

⑨ Remove 4 screws fixing the CD Mechanism Unit.
⑩ Detach the CD Mechanism Unit in the arrow direction.


⑨
⑨
CD Mechanism Unit
⑩
⑨
⑨

5. Main P.W.B. Unit

⑪ Remove 6 screws fastening the Main P.W.B. Unit and detach the Main P.W.B. Unit in the arrow direction.

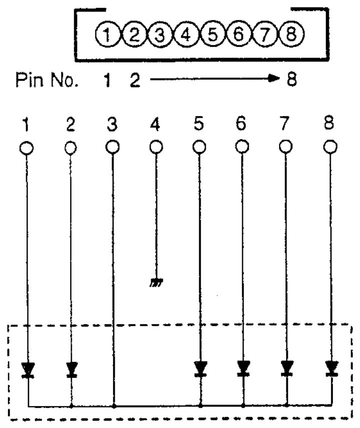

⑪
⑪
⑪
Main P.W.B U
⑪
⑪
⑪

LASER PICKUP

Terminal Connection

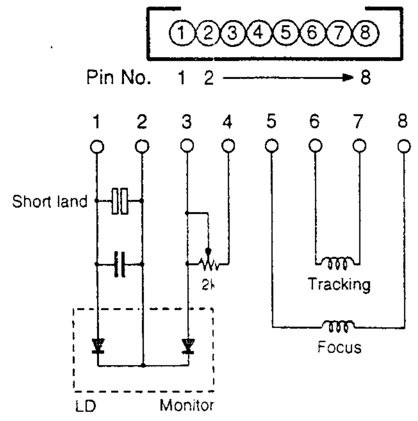
1. PD Connector (Pick-up section)

Terminal No.	Contents
1	PD F
2	PD E
3	PD K
4	PD GND
5	PD A
6	PD B
7	PD C
8	PD D



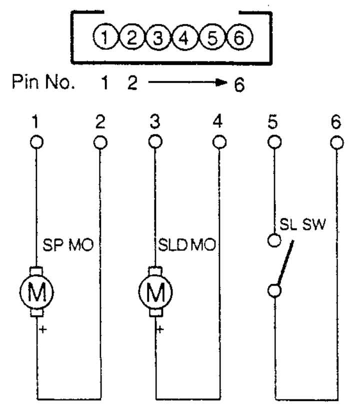
2. LD Actuator Connector (Pick-up section)

Terminal No.	Contents
1	LD
2	LD GND
3	LD Monitor
4	LD Reference level
5	FCS (B) −
6	TRK (B) +
7	TRK (A) −
8	FCS (A) +



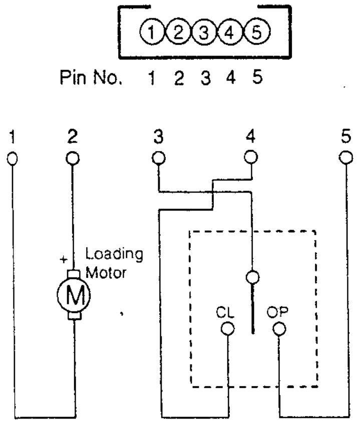
3. Motor Connector (Motor unit section)

Terminal No.	Contents
①	Spindle motor −
②	Spindle motor +
③	Sled moter −
④	Sled motor +
⑤	Limit switch
⑥	Limit switch



4. Loading Connector (Loading unit section)

Termina No.	Contents
1	Loading motor −
2	Loading motor +
3	Common terminal
4	Draw out detection terminal
5	Storing detection terminal



List of Using Connector

Name	Maker's Name	Kind	Type	color
PD connector	JST	PH connector	B8B-PH	White
LD actuator connector	JST	PH connector	B8B-PH	Red
Motor connector	JST	PH connector	S6B-PH	White
Loading connector	JST	SAN connector	5P-SAN-PH	White

CAUTION

When replacing Pick-up section, connect red connector cord to PD connector (white) of Pick-up section, and white connector cord to LD connector (red) of Pick-up section.

Description of the Components

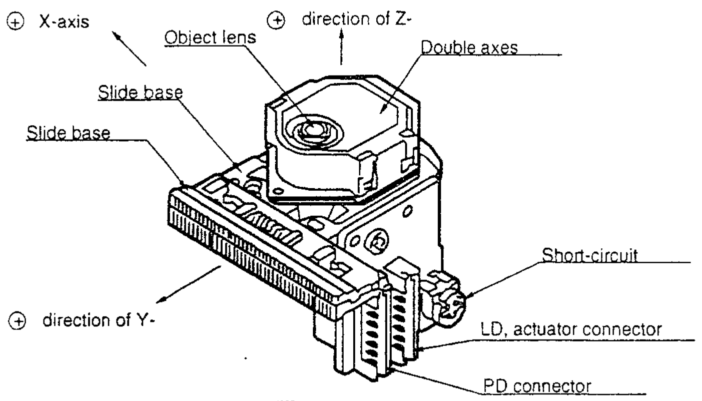


Fig-1

Caution for Handling the Laser Pickup

The laser pick-up KSS-240A is assembled and precisely adjusted using a sophisticated manufacturing process in our plant. Do not disassemble or attempt to readjust it. Please keep the following instructions carefully in handling pick-up.

1. Handle with care

(1) Storage

Do not store the pickup in dusty, high-temperature or high-humidity environments.

Be sure to place ⊕ direction of Z-axis up or ⊕ direction of Y-axis down as shown in the Fig-1 during shipment.

(2) Please take care for preventing from shock by falling down or careless handling.

2. Laser Diode (LD)

(1) Protect your eyes

The laser beam may damage the human eye, since the intensity of the focused spot may reach 7 x 10^3 W/cm^2 even if the intensity at the objective lens is 400 μW maximum. As the light beam spreads after focused through the odjective lens, it does not effect you in the place as far as more than 30 cms. However, do not look at the laser light beam either through the odjective lens directly nor another lens or a mirror.

(2) Poison of As

Since the LD chip contains As (Arsenic), as GaAs + GaAlAs, as known as the poison, although the poison is relatively weak, in comparing with others, e.g.As_2O_3, $AsCl_3$ etc., and the amount is small, avoid putting the chip in acid or an alkali solution, heating it over 200 ℃ or putting it into your mouth.

(3) Avoid surge current or electrostatic discharge

The LD may be damaged or deteriorated by its own strong light if a large current is supplied to it, even if only a short pulse.

Make sure that there is no surge current in the LD driving circuit by switches or else. Be careful to handle pick-up as it may be damaged in a moment by human electrostatic discharge. The pins of the LD are short-circuited by solder for protection during shipment.

For safety handling of an LD, grounding the human body, measuring equipments and jig is strongly recommended.

And still it is further desirable to make use of mat on the platform and floor for handling the LD.

To open the short-circuit, remove the soldering quickly with a soldering iron whose metal part is grounded.

The temperature of the soldering iron should be less than 320 ℃ (30 W).

3. Double axes

(1) Actuator

The performance of the actuator may be effected if magnetic material is located nearby, since the actuator has a strong magnetic circuit. Do not permit dust to enter through the clearance of the cover.

(2) Cleaning the lens

It may change the specifications by attaching dust or ash on the objective lens. Clean the lens with a cleaning paper dampened with a little water, not pressing lens with so much strength by the cleaning paper.

4. Lubrication

No lubrication is essential in operation.

5. Servo Circuit

As this unit is employed a fully adjusted circuit, never attempt to adjust the control volumes.

Cautions for Operation

(1) APC Circuit

Because the laser diode (LD) differs its optical output greatly by temperature, make the compensation of optical output with a monitor photo diode built in LD.

In order to make monitor photo diode in unified characteristic, the optical output and monitor photo diode relation of VR adopted to pick-up is adjusted the RF output fixed. RF level at the time using a supplied estimate reference circuit becomes 1 Vp-p.

(2) Connection

Connection must be used the specified connector.

If noise source such as microcomputer, etc. exists close to the harness coming from photo diode may deteriorate eye pattern, be paid attention.

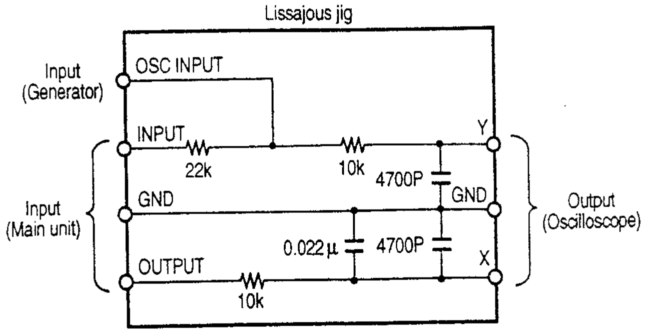
Failure connection in LD, actuator connector may result in laser deterioration. Firmly connect the connectors.

ADJUSTMENTS

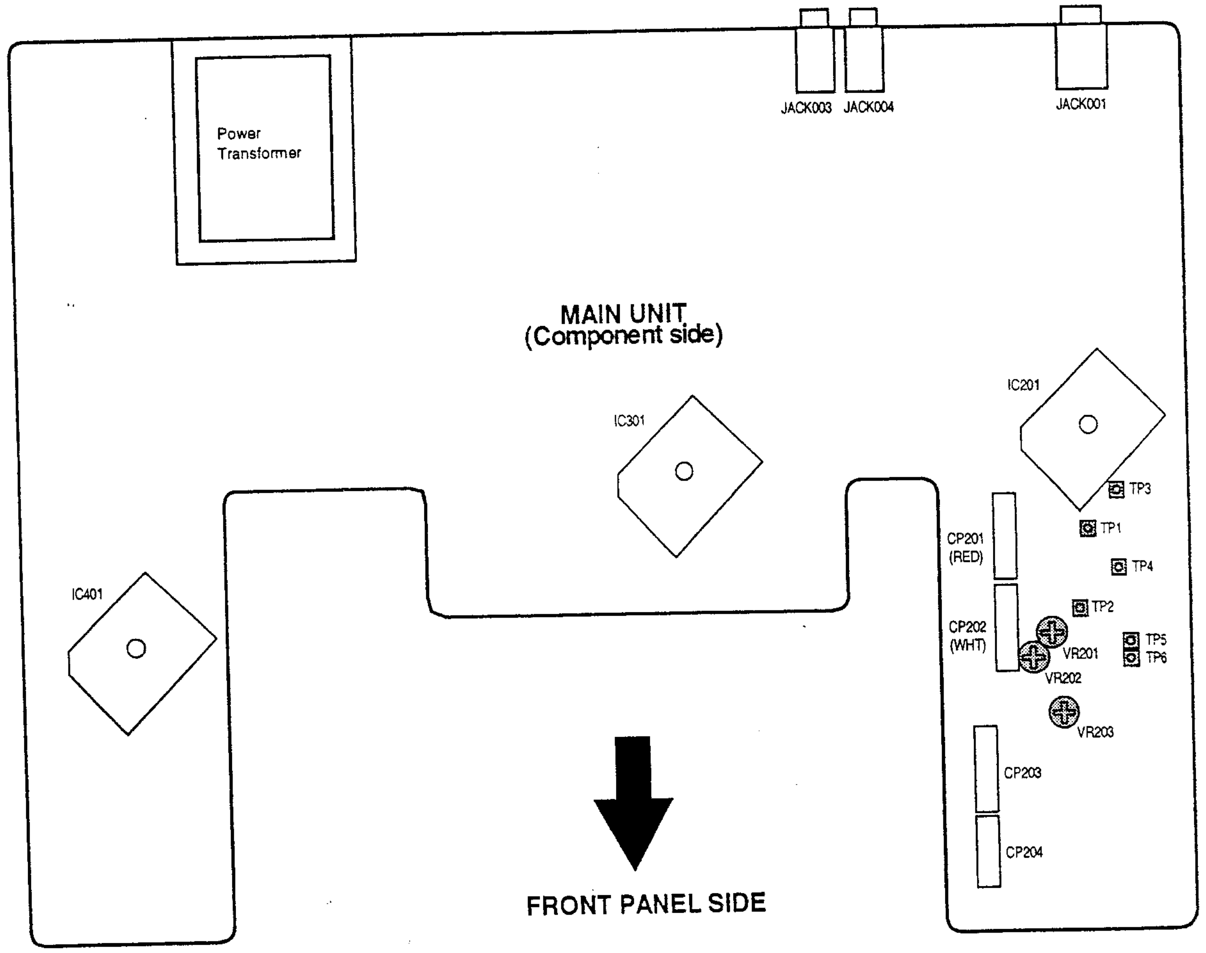
1. Adjustment method

(1) Necessary equipment for adjustment

1. Dual trace oscilloscope
2. Reference disc TOMITA YASUKO
   (CA-1094 or CA-1094A)
3. Oscillator (10 Hz ~ 10 kHz, 0 ~ 3 Vp-p)
4. Frequency counter (readable no less than 5 kHz)
5. Lissajous jig


Lissajous jig
Input
(Generator)
OSC INPUT
INPUT
22k
10k
4700P
Y
GND
Input
(Main unit)
GND
OUTPUT
0.022µ
4700P
X
10k
Output
(Oscilloscope)

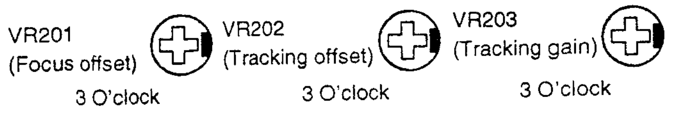
(2) Location


Power
Transformer
JACK003
JACK004
JACK001
MAIN UNIT
(Component side)
IC201
IC301
IC401
TP3
TP1
TP4
TP2
TP5
TP6
CP201
(RED)
CP202
(WHT)
VR201
VR202
VR203
CP203
CP204
FRONT PANEL SIDE

TEST POINT

TP1 : 2.5V
TP2 : RF
TP3 : FEO
TP4 : FEI
TP5 : TEO
TP6 : TEI

(3) Preset

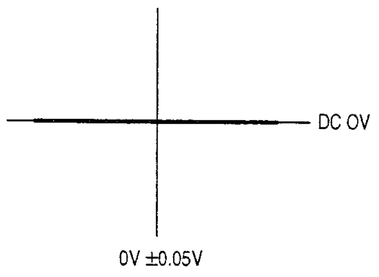
1.	Preset VR201 to 203 as per right fiqure.	 VR201 (Focus offset) 3 O'clock VR202 (Tracking offset) 3 O'clock VR203 (Tracking gain) 3 O'clock
2.	Step.	1. Focus offset (refer to page 78) 2. Tracking offset (refer to page 78) 3. Tracking gain (refer to page 78)

CD PLAYER SECTION

Adjustment Disc: CA-1094 or CA-1094A

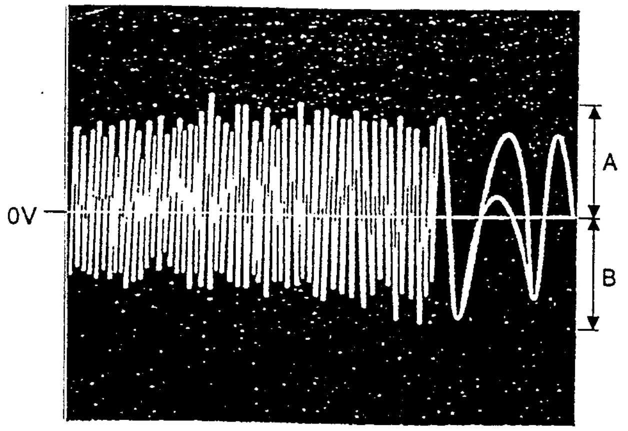
1. Focus offset Adjustment

1. Connect an oscilloscope to TP3 (FEO) and TP1 (2.5 V).
2. Insert the disc and set the unit in stop mode.
3. Adjust VR201 so as a DC voltage value on the scope becomes 0 V.

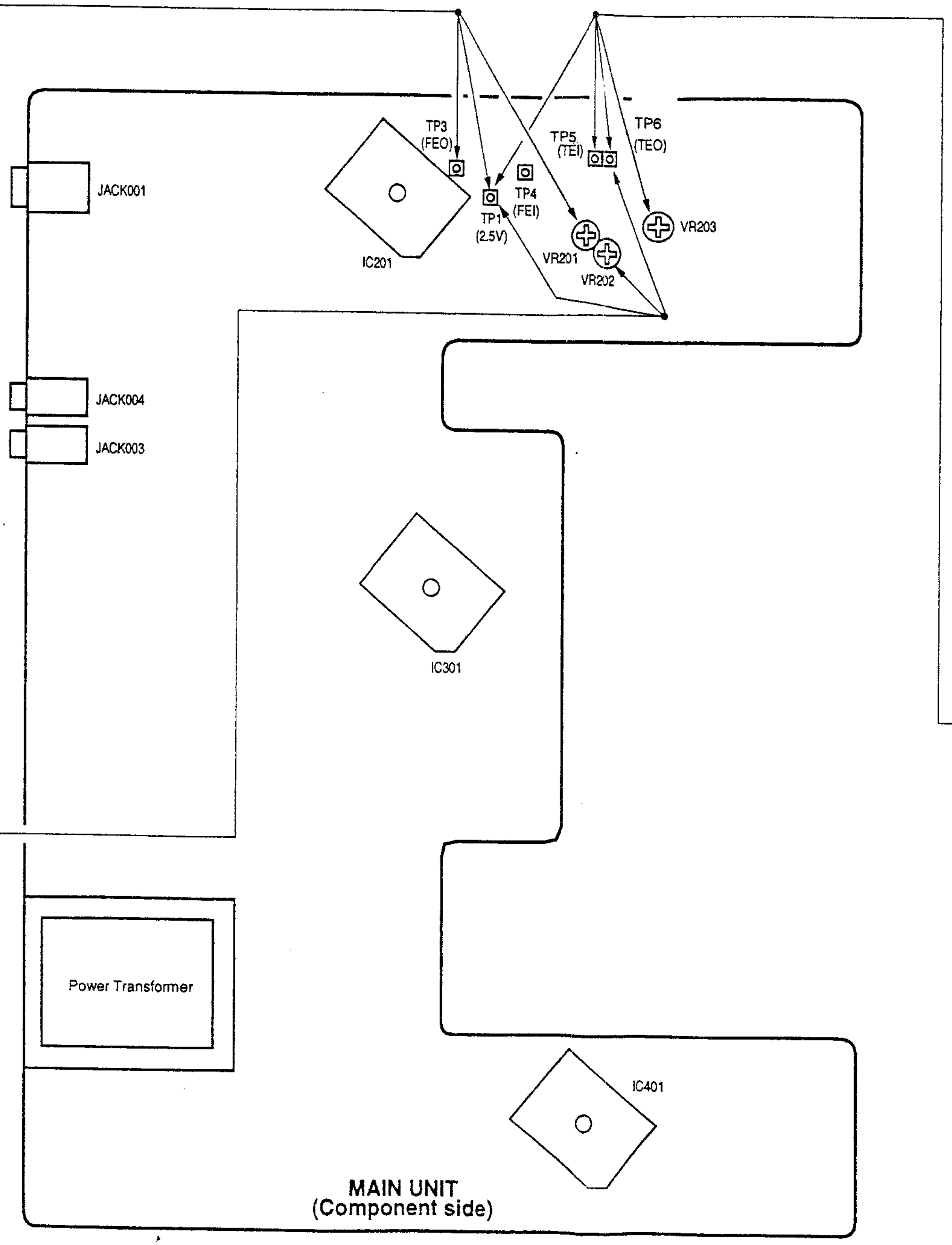

DC OV
0V ±0.05V

2. Tracking offset Adjustment

1. Connect an oscilloscope to TP5 (TEO) and TP1 (2.5 V).
2. Insert the disc and set the unit in play mode.
3. Set VR203 fully counterclockwise.
4. Adjust VR202 and obtain a waveform on the scope becomes A = B.



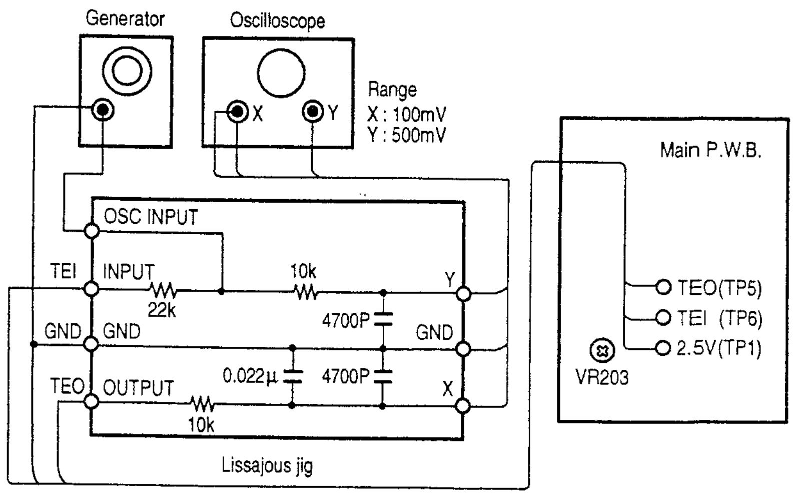
A=B±0.1V


TP3 (FEO)
TP5 (TEI)
TP6 (TEO)
TP4 (FEI)
TP1 (2.5V)
VR201
VR202
VR203
IC201
JACK001
JACK004
JACK003
IC301
Power Transformer
IC401

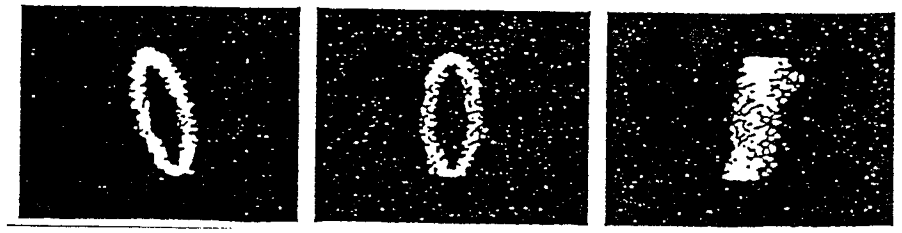
MAIN UNIT
(Component side)

3. Tracking Gain Adjustment

1. Connect INPUT terminal of Lissajous jig and TP6 (TEI).
2. Connect OUTPUT terminal of Lissajous jig and TP5 (TEO).
3. Connect GND terminal of Lissajous jig and TP1 (2.5 V).
4. Connect OSC INPUT terminal of Lissajous jig and output terminal of generator.
5. Connect GND terminal of Lissajous jig and GND terminal of generator.
6. Connect X, Y terminals of Lissajous jig and X, Y terminals of oscilloscope.
7. Connect GND terminal of Lissajous jig and GND terminal of oscilloscope.
8. Adjust the generator so as to obtain a frequency 900 Hz, output 4.0 Vp-p.
9. Load the disc and set the unit in play mode.
10. Adjust VR203 to obtain a waveform on the scope as indicated the following figures.


Generator
Oscilloscope
X
Y
Range
X : 100mV
Y : 500mV
Main P.W.B.
OSC INPUT
TEI
INPUT
22k
10k
Y
4700P
GND
GND
GND
TEO
OUTPUT
0.022µ
4700P
X
10k
Lissajous jig
TEO(TP5)
TEI (TP6)
2.5V(TP1)
VR203

■ Tracking Gain Waveform



No good
(Clockwise gain: Max)

Good
(Center)

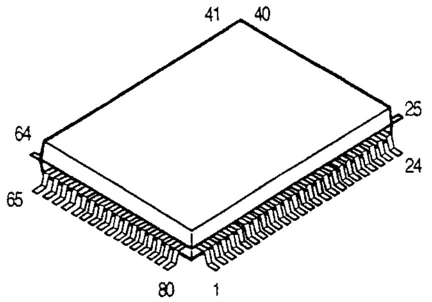
No good
(Counterclockwise gain: Max)

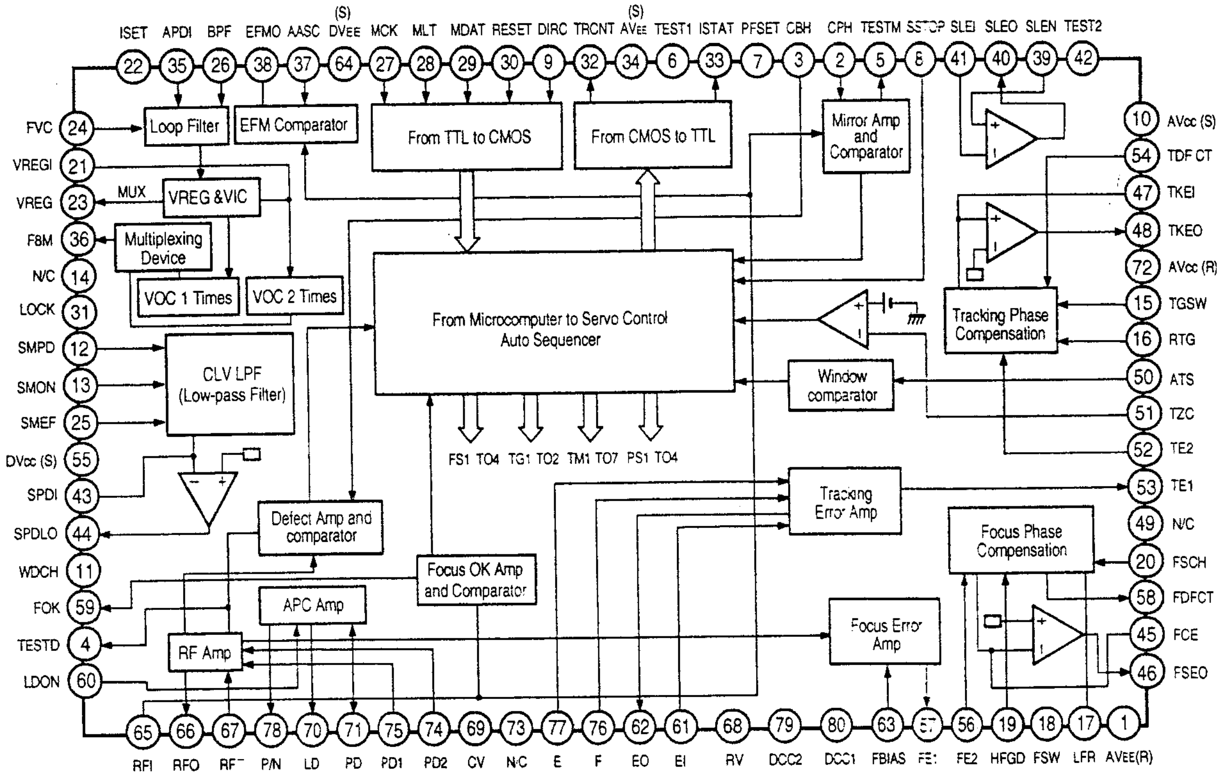
SEMICONDUCTORS

● IC's

KA9220B

(IC201) Linear Integrated Circuit


41
40
25
24
64
65
80
1

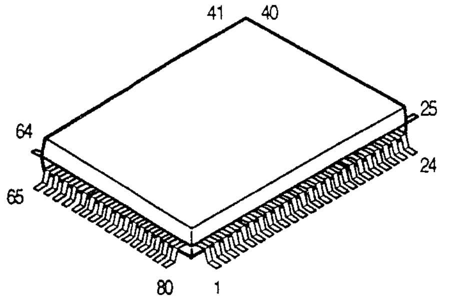

ISET
APDI
BPF
EFMO
AASC
(S) DVEE
MCK
MLT
MDAT
RESET
DIRC
TRCNT
(S) AVEE
TEST1
ISTAT
PFSET
CBH
CPH
TESTM
SSTOP
SLEI
SLEO
SLEN
TEST2
FVC
VREGI
VREG
F8M
N/C
LOCK
SMPD
SMON
SMEF
DVcc (S)
SPDI
SPDLO
WDCH
FOK
TESTD
LDON
AVcc (S)
TDF CT
TKEI
TKEO
AVcc (R)
TGSW
RTG
ATS
TZC
TE2
TE1
N/C
FSCH
FDFCT
FCE
FSEO
RFI
RFO
RF⁻
P/N
LD
PD
PD1
PD2
CV
N/C
E
F
EO
EI
RV
DCC2
DCC1
FBIAS
FE1
FE2
HFGD
FSW
LFR
AVEE(R)
Loop Filter
EFM Comparator
From TTL to CMOS
From CMOS to TTL
Mirror Amp and Comparator
MUX
VREG &VIC
Multiplexing Device
VOC 1 Times
VOC 2 Times
From Microcomputer to Servo Control Auto Sequencer
Tracking Phase Compensation
Window comparator
CLV LPF (Low-pass Filter)
FS1 TO4 TG1 TO2 TM1 TO7 PS1 TO4
Tracking Error Amp
Defect Amp and comparator
Focus Phase Compensation
Focus OK Amp and Comparator
APC Amp
RF Amp
Focus Error Amp

KA9220 Terminal Function

Pin No.	Terminal Name	Function
1	AVEE(R)	Analog – power supply input for RF part.
2	CPH	Capacitor connection pin for mirror hold.
3	CBH	Capacitor connection pin for defect bottom hold.
4	TESTD	Defect test pin.
5	TESTM	Mirror test pin.
6	TEST1	Input pin for test.
7	PFSET	Peak frequency set pin and CLVLPF cut-off frequency set pin for focus, tracking compensation.
8	SSTOP	Checking of pick-up positioning pin that is inside or not.
9	DIRC	Direction control pin of 1 track jump.
10	AVCC(S)	Analog + power supply input for servo part.
11	WDCH	Auto sequencer clock input pin (normal speed = 88.2 kHz, double speed = 176.4 kHz).
12	SMPD	Connection pin of DSPSMPD.
13	SMON	Connection pin of DSPSMON. Spindle servo turns ON at "H".
14	N/C	No connection.
15	TGSW	Gives time constant for changing high frequency tracking gain.
16	RTG	Capacitor connection pin for shifting tracking gain to high frequency.
17	LFR	Capacitor connection pin for lifting lower frequency band of focus servo loop.
18	FSW	Enables to shift high frequency gain of focus servo loop with switch FS3 ON/OFF.
19	HFGD	Reduces high frequency gain with a capacitor connected between Pin18 and Pin 19.
20	FSCH	External time constant pin for generating focus search waveform.
21	VREGI	Voltage input pin of external VCO regulator.
22	ISET	Decides peak value of focus search, track jump and SLED kick.
23	VREG	Regulator output pin of 3.5V.
24	FVC	Pin connected to external resistor for VCO free-run frequency adjustment.
25	SMEF	Supplies time constant of CLV SERVO loop external LPF.
26	BPF	Supplies time constant for VCO loop filter.
27	MCK	Clock signal input pin from microcomputer.
28	MLT	Latch signal input pin from microcomputer.
29	MDAT	Data signal input pin from microcomputer.
30	RESET	Reset signal input pin from microcomputer, "L" to reset.
31	LOCK	Pin for overrun preventing function operation at "L".
32	TRCNT	Track counting output pin.
33	ISTAT	Inner status output pin.
34	AVEE(S)	Analog – power supply input pin for servo part.
35	APDI	Phase comparing output of DSP. (PHAS) input pin.
36	F8M	Output pin of analog VCO (normal speed = 8.64 MHz, Double speed = 17.28 MHz).
37	AASC	Auto asymmetric control input pin.
38	EFMO	EFM comparator output pin.
39	SLEN	Input pin of non-inverting SLED SERVO Amp.
40	SLEO	Output pin of SLED SERVO Amp.
41	SLEI	Input pin of inverting SLED SERVO Amp.
42	TEST2	Test input pin for speed mode shifting (normal speed = "H", double speed = "L").
43	SPDI	Input pin of inverting spindle servo Amp.
44	SPDLO	Output pin of spindle servo Amp.
45	FCE	Input pin of inverting focus servo Amp.
46	FSEO	Output pin of focus servo Amp.
47	TKEI	Input pin of non-inverting tracking servo Amp.
48	TKEO	Output pin of tracking servo Amp.
49	N/C	No connection.
50	ATS	Anti-shock input pin.
51	TZC	Tracking zero cross input pin.
52	TE2	Tracking error servo input pin.
53	TE1	Tracking error amp output pin.
54	TDFCT	Capacitor connection pin for tracking servo defect compensation.
55	DVCC(S)	Digital + power supply input pin for servo part.
56	FE2	Focus error servo input pin.
57	FE1	Focus error Amp output pin.
58	FDFCT	Capacitor connection pin for focus servo defect compensation.
59	FOK	Output pin of focus OK comparator.
60	LDON	ON/OFF control pin of laser diode.
61	EI	EI-V Amp feedback input pin.
62	EO	EI-V Amp output pin.
63	FBIAS	Bias pin of non-inverting focus error Amp input.
64	DVEE(S)	Digital – power supply input pin for servo part.
65	RFI	Output signal of RF addition Amp input through capacitor.
66	RFO	Output pin of RF addition Amp.
67	RF-	Input pin of inverting RF addition Amp.
68	RV	Output pin of voltage (Avcc +AVEE)/2
69	CV	Bias input pin of center voltage buffer.
70	LD	Output pin of APC Amp.
71	PD	Input pin of APC Amp.
72	AVCC(R)	Analog + power supply input pin for RF part.
73	N/C	No connection.
74	PD2	Input pin of inverting RFI-V Amp 2.
75	PD1	Input pin of inverting RFI-V Amp 1.
76	F	Input pin of inverting FI-V Amp.
77	E	Input pin of inverting EI-V Amp.
78	P/N	P-sub/N-sub selection of laser diode.
79	DCC2	Output of defect bottom hold input through capacitor.
80	DCC1	Output pin of defect bottom hold.

CD PLAYER SECTION

KS9282
(IC301) CMOS Integrated Circuit


41
40
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64
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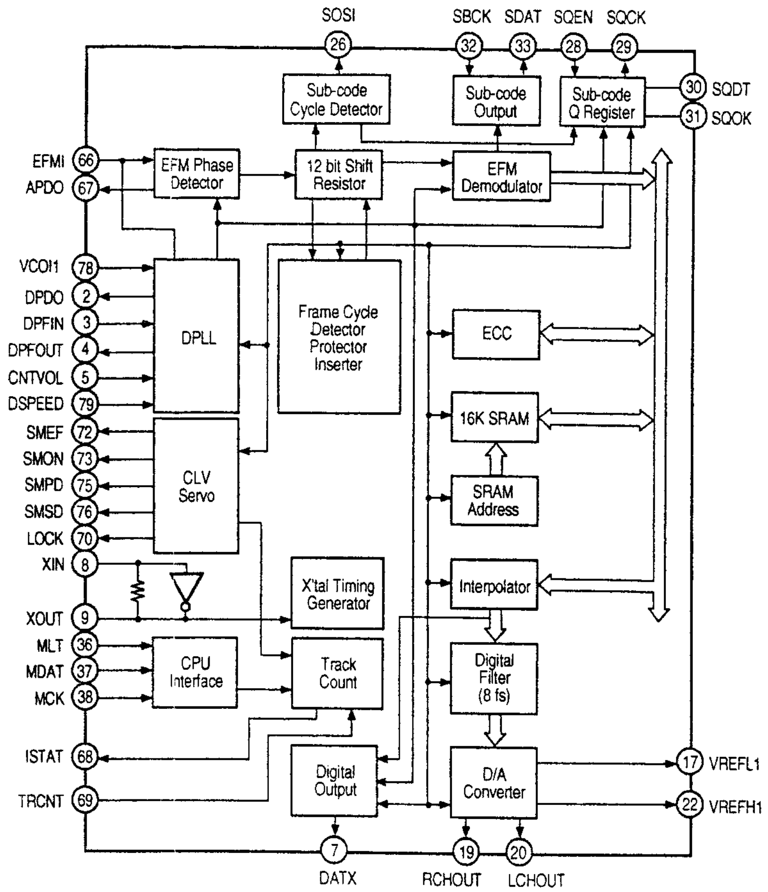
65
80
1

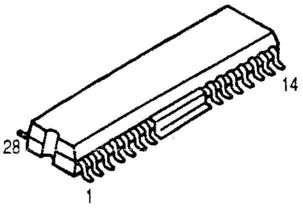

SOSI
SBCK
SDAT
SQEN
SQCK
26
32
33
28
29
Sub-code Cycle Detector
Sub-code Output
Sub-code Q Register
30 SQDT
31 SQOK
EFMI 66
APDO 67
EFM Phase Detector
12 bit Shift Resistor
EFM Demodulator
VCOI1 78
DPDO 2
DPFIN 3
DPFOUT 4
CNTVOL 5
DSPEED 79
DPLL
Frame Cycle Detector Protector Inserter
ECC
16K SRAM
SRAM Address
SMEF 72
SMON 73
SMPD 75
SMSD 76
LOCK 70
XIN 8
CLV Servo
XOUT 9
X'tal Timing Generator
Interpolator
MLT 36
MDAT 37
MCK 38
CPU Interface
Track Count
Digital Filter (8 fs)
ISTAT 68
TRCNT 69
Digital Output
D/A Converter
17 VREFL1
22 VREFH1
7
19
20
DATX
RCHOUT
LCHOUT

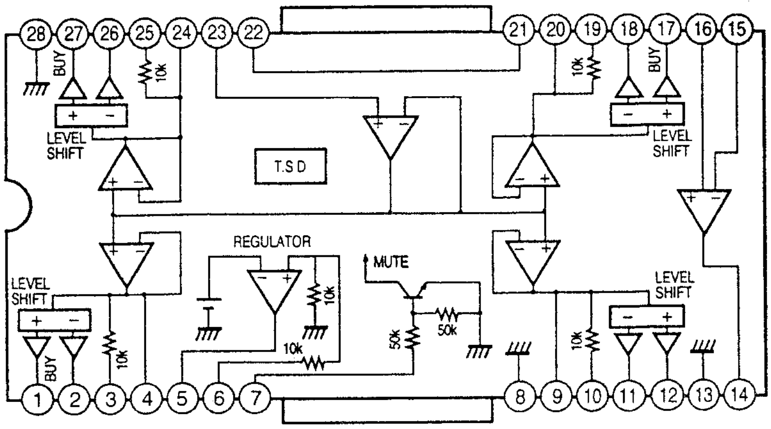
KS9282 Terminal Function

Pin No.	Symbol	I/O	Function
1	AVDD1		Analog Vcc1.
2	DPDO	O	Charge pump output for master PLL.
3	DPFIN	I	Filter input for master PLL.
4	DPFOUT	O	Filter output for master PLL.
5	CNTVOL	I	VCO control voltage for master PLL.
6	AVSS1		Analog GND 1.
7	DATX	O	Digital audio output.
8	XIN	I	X'tal oscillator input.
9	XOUT	O	X'tal oscillator output.
10	WDCH	O	Word clock of 48-bit/SLOT (normal speed = 88.2 kHz, double speed = 176.4 kHz).
11	LRCH	O	Channel clock of 48-bit/SLOT (normal speed = 44.1 kHz, double speed = 88.2 kHz).
12	ADATA	O	Serial audio data output of 48-bit/SLOT (MSB 1st).
13	DVSS1		Digital GND 2.
14	BCK	O	Audio data bit clock for 48-bit/SLOT (normal speed = 2.1168 kHz, double speed = 4.2336 kHz).
15	C2PO	O	C2 pointer for output audio data.
16	VREFL2	I	Input terminal 2 of reference voltage "L" (floating).
17	VREFL1	I	Input terminal 1 of reference voltage "L" (GND connection).
18	AVDD2		Analog Vcc2.
19	RCHOUT	O	R-ch audio output through D/A converter.
20	LCHOUT	O	L-ch audio output through D/A converter.
21	AVSS2		Analog GND 2.
22	VREFH1	I	Input terminal 1 of reference voltage "H" (VDD connection).
23	VREFH2	I	Input terminal 2 of reference voltage "H" (floating)
24	EMPH	O	Emphasis/non-emphasis output ("H" : emphasis).

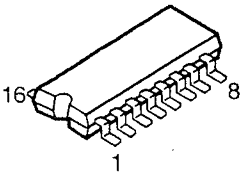
Pin No.	Symbol	I/O	Function
25	LKFS	O	Output of frame sync lock state.
26	SOSI	O	Sub-code sync signal (S0 + S1) output.
27	RESET	I	Resets system at "L".
28	SQEN	I	SQCK I/O control ("L" : inner CK, "H" : external CK).
29	SQCK	I/O	Clock for output sub-code Q data.
30	SQDT	O	Serial output of sub-code Q data.
31	SQOK	O	CRC check result signal output of sub-code Q data.
32	SBCK	I	Clock for output sub-code Q data.
33	SDAT	O	Sub-code serial data output.
34	DVDD1		Digital Vcc1.
35	MUTE	I	Mute control input ("H" : mute ON).
36	MLT	I	Latch signal input from microcomputer.
37	MDAT	I	Serial data input from microcomputer.
38	MCK	I	Serial clock input from microcomputer.
39	DB8	I/O	SRAM data I/O port 8 (MSB).
40	DB7	I/O	SRAM data I/O port 7.
41	DB6	I/O	SRAM data I/O port 6.
42	DB5	I/O	SRAM data I/O port 5.
43	DB4	I/O	SRAM data I/O port 4.
44	DB3	I/O	SRAM data I/O port 3.
45	DB2	I/O	SRAM data I/O port 2.
46	DB1	I/O	SRAM data I/O port 1 (LSB).
47	C1F1	I/O	Monitor output for C1 error compensation (RA1).
48	C1F2	I/O	Monitor output for C1 error compensation (RA2).
49	C2F1	I/O	Monitor output for C2 error compensation (RA3).
50	C2F2	I/O	Monitor output for C2 error compensation (RA4).
51	C2FL	I/O	C2 decoder flag (High : processing C2 code is in state of unable to compensate)(RAS).
52	$\overline{PBCK}$	I/O	Output of VCO/2 (normal speed: 4.3218 MHz, double speed : 8.6436 MHz).
53	DVSS2		Digital GND2.
54	FSDW	I/O	Unprotected frame sync (RA7).
55	ULKFS	I/O	Frame sync protect condition (RA8).
56	$\overline{JIT}$	I/O	Both displays-overflow and underflow of RAM for ±4 fram jitter margin (RA9).
57	C4M	I/O	Monitor signal only (normal playback : 4.2336 MHz) (RA10).
58	C16M	I/O	16.9344 MHz signal output (RA11).
59	$\overline{WE}$	I/O	Test terminal.
60	$\overline{CS}$	I/O	Test terminal.
61	SEL1	I	Mode select terminal 1 (H: 33.8688 MHz, L: 16.9344 MHz).
62	SEL2	I	Mode select terminal 2 (H: APLL, L: DPLL).
63	SEL3	I	Mode select terminal 3 (H: CDROM, L: CDP).
64	SEL4	I	Mode select terminal 4 (L: inner SLAM).
65	TEST	I	Test terminal (L = normal operation mode).
66	EFMI	I	EFM signal input.
67	APDO	O	Charge pump output for analog PLL.
68	$\overline{ISTAT}$	O	Inner state output.
69	TRCNT	I	Tracking counting input signal.
70	LOCK	O	LKFS state sampling output signal of PBFR/16 (If LKFS is "H", LOCK is "H"; If LKFS is sampled "L" at least 8 time by PBFR/16, LOCK is "L").
71	PBFR	O	Writing of frame clock (LOCK : 7.35 kHz).
72	SMEF	O	LFP time constant control of spindle servo error.
73	SMON	O	ON/OFF control signal of spindle servo.
74	DVDD2		Digital Vcc2.
75	SMPD	O	Spindle motor drive (rough control at CLV-S mode, phase control at CLV-P mode).
76	SMSD	O	Spindle motor drive (speed control at CLV-S mode).
77	VCOO1	O	VCO output signal (When the state is Locked by PBFR, 8.643 MHz).
78	VCOI1	I	VCO input signal.
79	DSPEED	I	Double speed mode control (H: normal speed, L: double speed).
80	APD02	O	Analog PLL charge pump output for double speed mode.

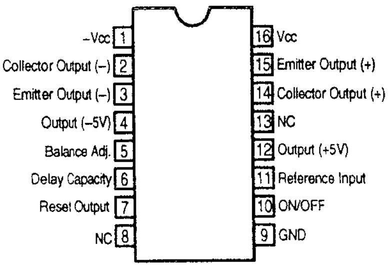
KA9258D (IC202)

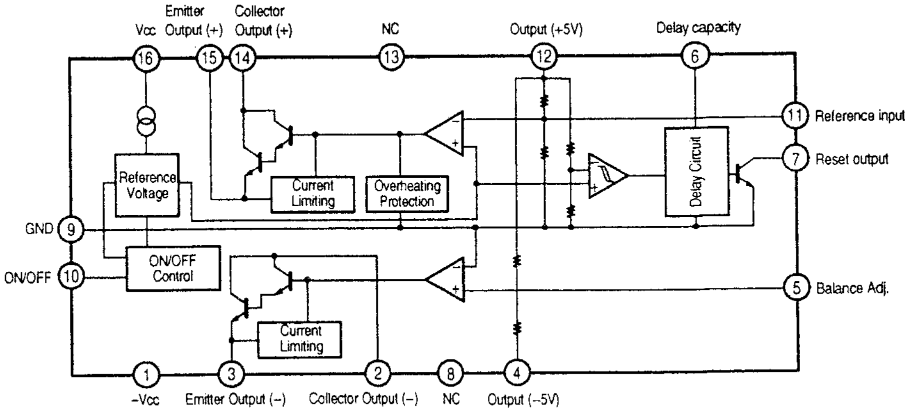



28
27
26
25
24
23
22
21
20
19
18
17
16
15
BUY
10k
LEVEL SHIFT
T.S D
REGULATOR
MUTE
50k
10k
1
2
3
4
5
6
7
8
9
10
11
12
13
14

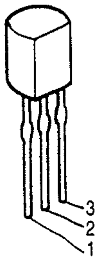
M5290FP (IC103)

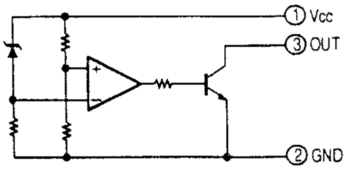



-Vcc 1
Collector Output (–) 2
Emitter Output (–) 3
Output (–5V) 4
Balance Adj. 5
Delay Capacity 6
Reset Output 7
NC 8
16 Vcc
15 Emitter Output (+)
14 Collector Output (+)
13 NC
12 Output (+5V)
11 Reference Input
10 ON/OFF
9 GND

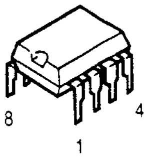

Vcc 16
Emitter Output (+) 15
Collector Output (+) 14
NC 13
Output (+5V) 12
Delay capacity 6
11 Reference input
7 Reset output
5 Balance Adj.
GND 9
ON/OFF 10
Reference Voltage
Current Limiting
Overheating Protection
Delay Circuit
ON/OFF Control
Current Limiting
1 -Vcc
3 Emitter Output (–)
2 Collector Output (–)
8 NC
4 Output (–5V)

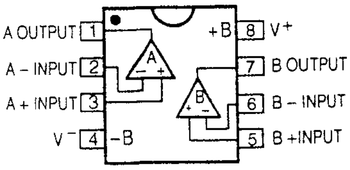
KIA7042P (IC402)



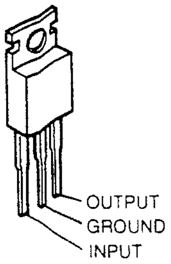

① Vcc
③ OUT
② GND

BA4558D (IC203, 501, 502)




A OUTPUT 1
A – INPUT 2
A + INPUT 3
V⁻ 4 -B
+B 8 V⁺
7 B OUTPUT
6 B – INPUT
5 B +INPUT
A
B

GL7808 (IC104)


OUTPUT
GROUND
INPUT

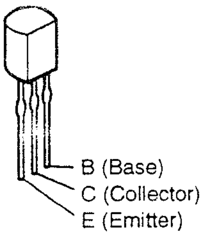
● IC PROTECTOR

ICP-N15 (IC101, 102)

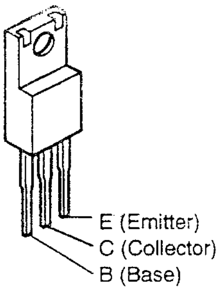
CD PLAYER SECTION

● TRANSISTORS

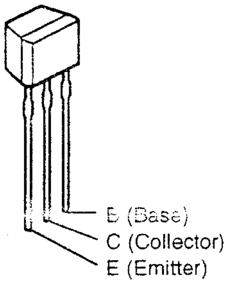
KTA1266 (Y)
KTC3198 (GR)


B (Base)
C (Collector)
E (Emitter)

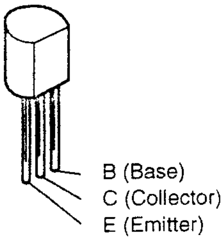
2SB1185 (E/F)


E (Emitter)
C (Collector)
B (Base)

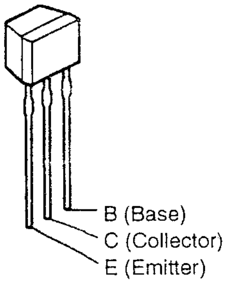
KTA1270 (Y)
KTC3202 (Y)


B (Base)
C (Collector)
E (Emitter)

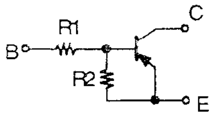
KTA1273 (Y)
KTC3205 (Y)


B (Base)
C (Collector)
E (Emitter)

DTA144WS (PNP)
DTC114ES
DTC143TS } (NPN)
DTC343TS

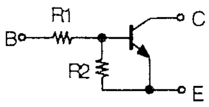

B (Base)
C (Collector)
E (Emitter)

PNP Type
DTA WS Series



	R1	R2
DTA144WS	47 kohm	22 kohm

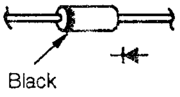
NPN Type
DTC ES/TS Series



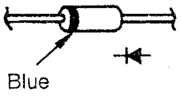
	R1	R2
DTC114ES	10 kohm	10 kohm
DTC143TS	4.7 kohm	—
DTC343TS	4.7 kohm	—

● DIODES

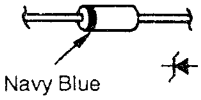
IN4002A



1SS131

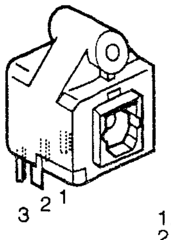


MTZJ5.1B
MTZJ5.6B
MTZJ24B



● OPTICAL OUTPUT TERMINAL

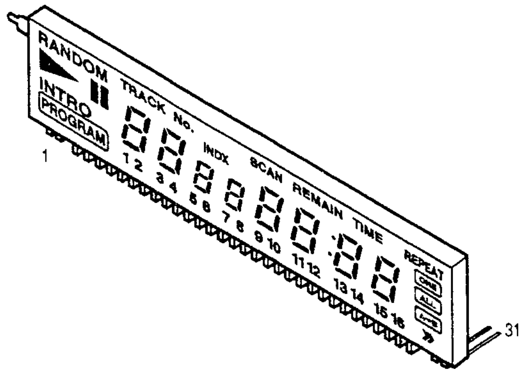
GP1F32T (JACK002)



1. GND
2. Vcc
3. Input

● FLUORESCENT DISPLAY TUBE 10BT197GK (FLT701)

(Part No.: DCD 2150 423)


RANDOM
INTRO
PROGRAM
TRACK No.
INDX
SCAN
REMAIN
TIME
REPEAT
1
31

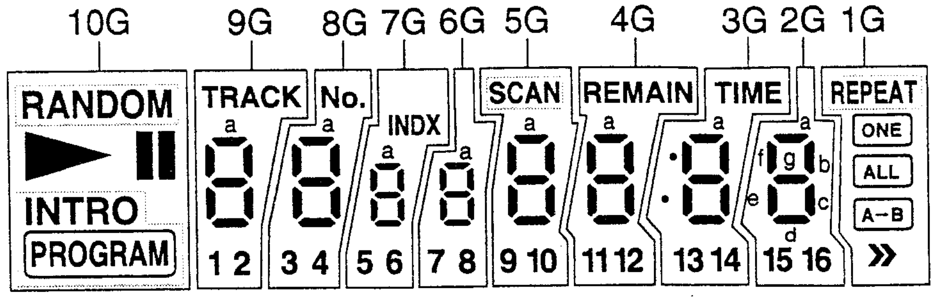
PIN CONNECTION

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Connection	F1	F1	NP	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	NC	a	b	c	d	e	f

Pin No.	25	26	27	28	29	30	31
Connection	g	h	i	j	NP	F2	F2

NOTE
1) Fl and F2: .... Filaments
2) NP: .... No pin
3) NC: .... No connection
4) 1G through 11G: .... Gird

GIRD ASSIGNMENT

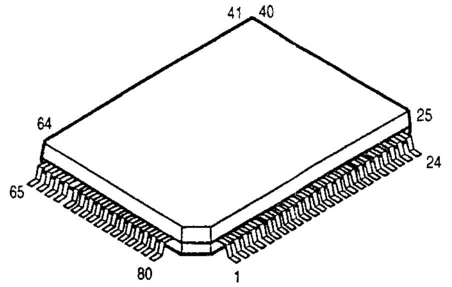

10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
RANDOM
INTRO
PROGRAM
TRACK
No.
INDX
SCAN
REMAIN
TIME
REPEAT
ONE
ALL
A-B
a
b
c
d
e
f
g
1 2
3 4
5 6
7 8
9 10
11 12
13 14
15 16
»

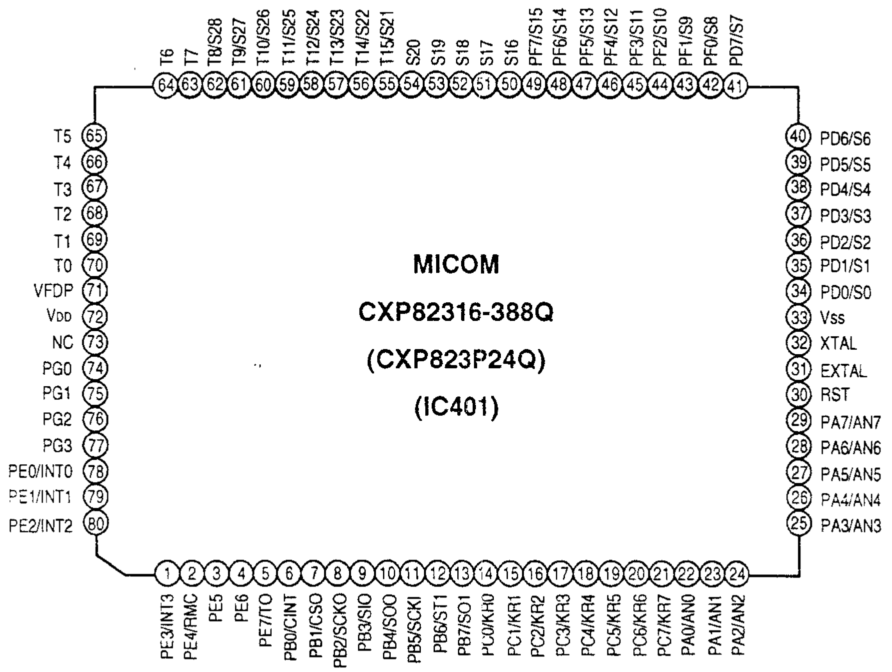
ANODE CONNECTION

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	RANDOM	a	a	a	a	a	a	a	a	—
P2	▶	b	b	b	b	b	b	b	b	—
P3	❚❚	c	c	c	c	c	c	c	c	—
P4	—	d	d	d	d	d	d	d	d	REPEAT
P5	—	e	e	e	e	e	e	e	e	ONE
P6	—	f	f	f	f	f	f	f	f	ALL
P7	—	g	g	g	g	g	g	g	g	A–
P8	—	TRACK	NO.	INDX	—	SCAN	REMAIN	TIME	—	B
P9	PROGRAM	1	3	5	7	9	11	13	15	—
P10	INTRO	2	4	6	8	10	12	14	16	»

MICROPROCESSOR DOCUMENTATION

CXP82316-388Q
(CXP823P24Q)
(IC401)

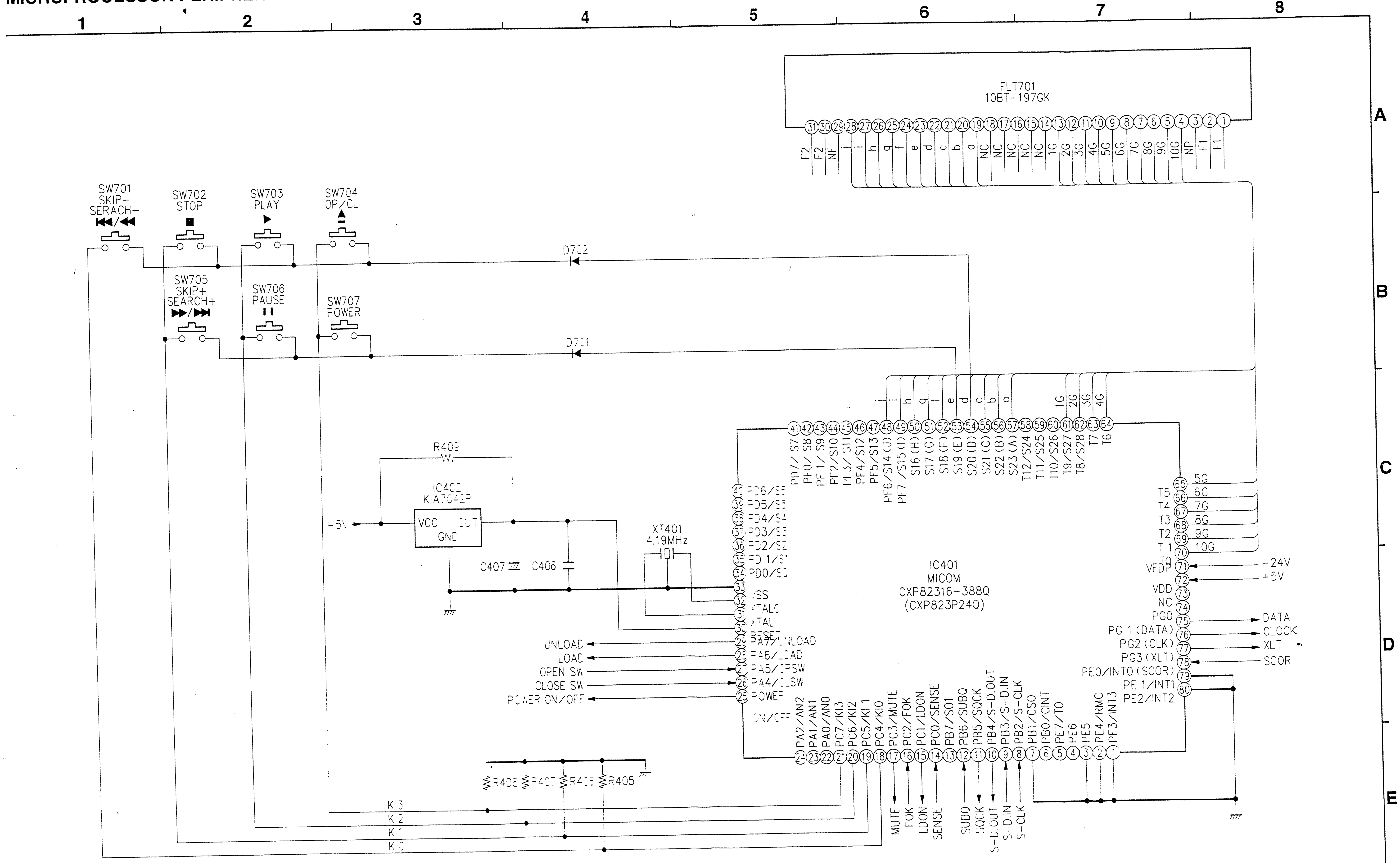

41
40
64
25
24
65
80
1


T6
T7
T8/S28
T9/S27
T10/S26
T11/S25
T12/S24
T13/S23
T14/S22
T15/S21
S20
S19
S18
S17
S16
PF7/S15
PF6/S14
PF5/S13
PF4/S12
PF3/S11
PF2/S10
PF1/S9
PF0/S8
PD7/S7
T5
T4
T3
T2
T1
T0
VFDP
VDD
NC
PG0
PG1
PG2
PG3
PE0/INT0
PE1/INT1
PE2/INT2
PD6/S6
PD5/S5
PD4/S4
PD3/S3
PD2/S2
PD1/S1
PD0/S0
Vss
XTAL
EXTAL
RST
PA7/AN7
PA6/AN6
PA5/AN5
PA4/AN4
PA3/AN3
MICOM
CXP82316-388Q
(CXP823P24Q)
(IC401)
PE3/INT3
PE4/RMC
PE5
PE6
PE7/T0
PB0/CINT
PB1/CSO
PB2/SCKO
PB3/SIO
PB4/SO0
PB5/SCKI
PB6/ST1
PB7/SO1
PC0/KR0
PC1/KR1
PC2/KR2
PC3/KR3
PC4/KR4
PC5/KR5
PC6/KR6
PC7/KR7
PA0/AN0
PA1/AN1
PA2/AN2

CXP82316-345Q (CXP823P24Q) Terminal Function

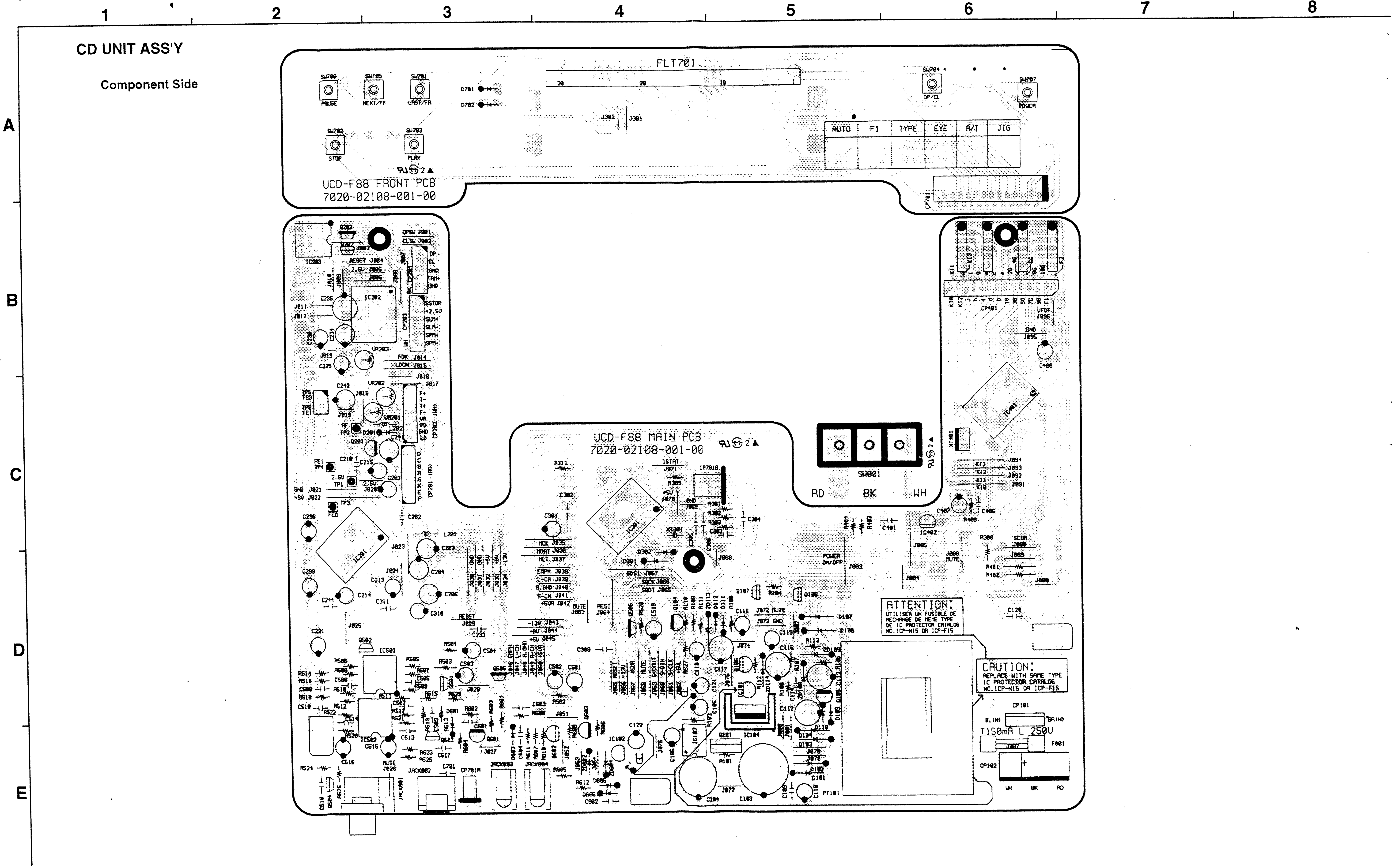
Pin No.	Port Name	Function Name	I/O	Ini	ACT	Function
1	PE3/INT3		I	—	—	Connect to GND.
2	PE4/RMC		I	—	—	Connect to GND.
3	PE5		I	—	—	Connect to GND.
4	PE6		O	—	—	Not used.
5	PE7/T0		O	—	—	Not used.
6	PB0/CINT		I/O	—	—	Not used.
7	PB1/CSO		I/O	—	—	Connect to GND.
8	PB2/SCKO	S-CLK	I	H	—	Serial input clock for system computer.
9	PB3/SIO	S-D. IN	I	H	—	Serial input data for system computer.
10	PB4/SO0	S-D. OUT	O	H	—	Serial output data for system computer.
11	PB5/SCKI	SQCK	O		—	Clock output signal for sub-code Q reading.
12	PB6/ST1	SUBQ	I		—	80-bit sub-code Q input signal.
13	PB7/SO1		O	—	—	Not used.
14	PC0/KR0	SENSE	I	—	H/L	SENSE input signal from CPU.
15	PC1/KR1	LDON	O	H	L	ON/OFF selection signal for CD.
16	PC2/KR2	FOK	I	L	H	Focus OK input signal terminal.
17	PC3/KR3	MUTE	O	H	H	Sound IC mute signal.
18	PC4/KR4	KI0	I	L	H	Key input.
19	PC5/KR5	KI1	I	L	H	Key input.
20	PC6/KR6	KI2	I	L	H	Key input.
23	PA1/AN1		O	—	—	Not used.
24	PA2/AN2		O	—	—	Not used.
25	PA3/AN3	POWER ON/OFF	O			Power switch.
26	PA4/AN4	CLOSE SW	I	H	L	Close switch input.
27	PA5/AN5	OPEN SW	I	H	L	Open switch input.
28	PA6/AN6	LOAD	O	H	L	Close motor signal.
29	PA7/AN7	UNLOAD	O	H	L	Open motor signal.
30	RST	RESET	—	—	H	Reset input.
31	EXTAL	XTAL IN	I	—	—	Resonator input.
32	XTAL	XTAL OUT	O	—	—	Resonator output.
33	VSS	VSS	O	—	—	GND.
34	PD0/S0		O	—	—	Not used.
35	PD1/S1		O	—	—	Not used.
36	PD2/S2		O	—	—	Not used.
37	PD3/S3		O	—	—	Not used.
38	PD4/S4		O	—	—	Not used.
39	PD5/S5		O	—	—	Not used.
40	PD6/S6		O	—	—	Not used.
41	PD7/S7		O	—	—	Not used.
42	PF0/S8		O	—	—	Not used.
43	PF1/S9		O	—	—	Not used.
44	PF2/S10		O	—	—	Not used.
45	PF3/S11		O	—	—	Not used.
46	PF4/S12		O	—	—	Not used.
47	PF5/S13		O	—	—	Not used.
48	PF6/S14	j	O			FL tube indication segment terminal (j).
49	PF7/S15	i	O			FL tube indication segment terminal (i).
50	S16	h	O			FL tube indication segment terminal (h).
51	S17	g	O			FL tube indication segment terminal (g).
52	S18	f	O			FL tube indication segment terminal (f).
53	S19	e	O			FL tube indication segment terminal (e).
54	S20	d	O			FL tube indication segment terminal (d).
55	T15/S21	c	O			FL tube indication segment terminal (c).
56	T14/S22	b	O			FL tube indication segment terminal (b).
57	T13/S23	a	O			FL tube indication segment terminal (a).
58	T12/S24		O	—	—	Not used.
59	T11/S25		O	—	—	Not used.
60	T10/S26		O	—	—	Not used.
61	T9/S27	1G	O			FL tube indication digit terminal 1G.
62	T8/S28	2G	O			FL tube indication digit terminal 2G.
63	T7	3G	O			FL tube indication digit terminal 3G.
64	T6	4G	O			FL tube indication digit terminal 4G.
65	T5	5G	O			FL tube indication digit terminal 5G.
66	T4	6G	O			FL tube indication digit terminal 6G.
67	T3	7G	O			FL tube indication digit terminal 7G.
68	T2	8G	O			FL tube indication digit terminal 8G.
69	T1	9G	O			FL tube indication digit terminal 9G.
70	T0	10G	O			FL tube indication digit terminal 10G.
71	VFDP	VFDP				–24V.
72	VDD	VDD				+5V.
73	NC		—	—	—	
74	PG0					
75	PG1	DATA	O	H	H/L	Serial data output signal for DSP.
76	PG2	CLK	O	H	H/L	Serial data transfer clock output signal.
77	PG3	XLT	O	H	L	Serial data latch output signal (latches data at falling).
78	PE0/INT0	SCOR	I	L	H	Sub-code sync signal.
79	PE1/INT1		I	—	—	Connect to GND.
80	PE2/INT2		I	—	—	Connect to GND.

MICROPROCESSOR PERIPHERAL WIRING DIAGRAM

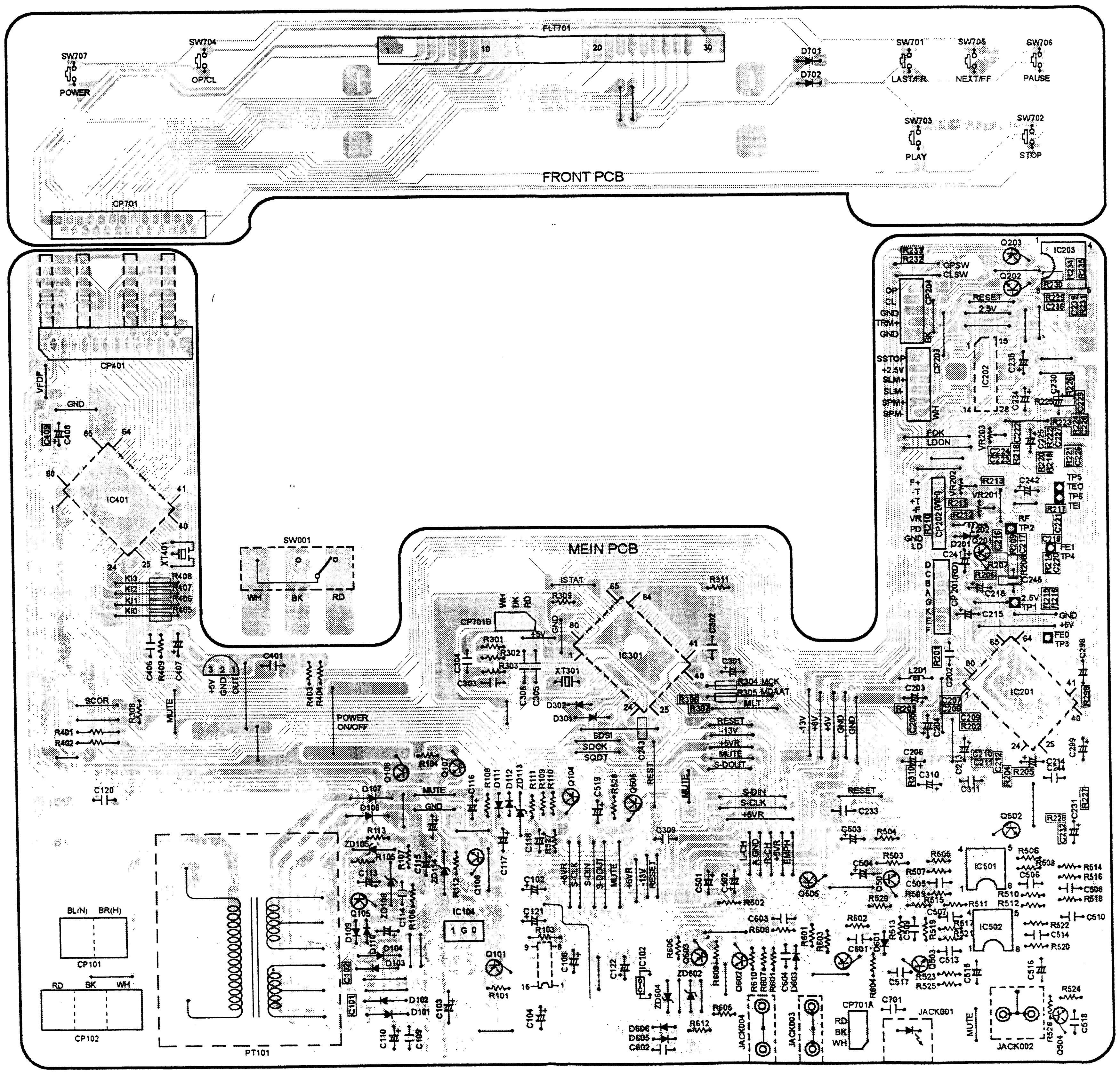

1
2
3
4
5
6
7
8
A
B
C
D
E
FLT701
10BT-197GK
F2
F2
NF
i
h
g
f
e
d
c
b
a
NC
1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
NP
F1
SW701
SKIP-
SERACH-
SW702
STOP
SW703
PLAY
SW704
OP/CL
SW705
SKIP+
SEARCH+
SW706
PAUSE
SW707
POWER
D702
D701
R409
IC402
KIA7042P
VCC
OUT
GND
+5V
C407
C406
XT401
4.19MHz
IC401
MICOM
CXP82316-388Q
(CXP823P24Q)
PD7/S7
PF0/S8
PF1/S9
PF2/S10
PF3/S11
PF4/S12
PF5/S13
PF6/S14(J)
PF7/S15(I)
S16(H)
S17(G)
S18(F)
S19(E)
S20(D)
S21(C)
S22(B)
S23(A)
T12/S24
T11/S25
T10/S26
T9/S27
T8/S28
T7
T6
T5
T4
T3
T2
T1
T0
PD6/S6
PD5/S5
PD4/S4
PD3/S3
PD2/S2
PD1/S1
PD0/S0
VSS
XTALO
XTALI
RESET
PA7/UNLOAD
PA6/LOAD
PA5/OPSW
PA4/CLSW
POWER ON/OFF
UNLOAD
LOAD
OPEN SW
CLOSE SW
POWER ON/OFF
VFDP
VDD
NC
PG0
PG1(DATA)
PG2(CLK)
PG3(XLT)
PE0/INT0(SCOR)
PE1/INT1
PE2/INT2
-24V
+5V
DATA
CLOCK
XLT
SCOR
PA2/AN2
PA1/AN1
PA0/AN0
PC7/KI3
PC6/KI2
PC5/KI1
PC4/KI0
PC3/MUTE
PC2/FOK
PC1/LDON
PC0/SENSE
PB7/SO1
PB6/SUBQ
PB5/SQCK
PB4/S-D.OUT
PB3/S-D.IN
PB2/S-CLK
PB1/CSO
PB0/CINT
PE7/TO
PE6
PE5
PE4/RMC
PE3/INT3
MUTE
FOK
LDON
SENSE
SUBQ
SQCK
S-D.OUT
S-D.IN
S-CLK
R408
R407
R406
R405
K3
K2
K1
K0

CD PLAYER SECTION

PRINTED WIRING BOARD


1
2
3
4
5
6
7
8
A
B
C
D
E
CD UNIT ASS'Y
Component Side
FLT701
SW706 PAUSE
SW705 NEXT/FF
SW701 LAST/FR
SW702 STOP
SW703 PLAY
SW704 OP/CL
SW707 POWER
AUTO
F1
TYPE
EYE
A/T
JIG
UCD-F88 FRONT PCB
7020-02108-001-00
UCD-F88 MAIN PCB
7020-02108-001-00
SW801
RD
BK
WH
ATTENTION:
UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE IC PROTECTOR CATALOG NO.ICP-N15 OR ICP-F15
CAUTION:
REPLACE WITH SAME TYPE IC PROTECTOR CATALOG NO.ICP-N15 OR ICP-F15
T150mA L 250V
IC201
IC202
IC203
IC301
IC401
IC501
IC502
IC101
IC102
IC103
IC104
CP701A
CP781
CP401
CP101
CP102
PT101
F001
JACK801
JACK802
JACK803
JACK804

Pattern Side


1
2
3
4
5
6
7
8
A
B
C
D
E
FLT701
SW707
POWER
SW704
OP/CL
D701
D702
SW701
LAST/FR
SW705
NEXT/FF
SW706
PAUSE
SW703
PLAY
SW702
STOP
FRONT PCB
CP701
CP401
IC401
XT401
SW001
WH
BK
RD
MEIN PCB
IC301
XT301
CP701B
IC201
IC202
IC203
CP203
CP204
CP201
IC501
IC502
IC104
PT101
CP101
BL(N)
BR(H)
CP102
JACK001
JACK002
JACK003
JACK004
CP701A
POWER ON/OFF
MUTE
RESET
GND
+5V
-13V
S-DIN
S-CLK
S-DOUT
OPSW
CLSW
FOK
LDON

CD PLAYER SECTION

NOTE FOR PARTS·LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: RN 14K 2E 182 G FR

RN: Type / 14K: Shape and performance / 2E: Power / 182: Resistance / G: Allowable error / FR: Others

Type	Power	Allowable error	Others
RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

∗ Resistance

1 8 2 ⇒ 1800 ohm = 1.8 kohm
2 — Indicates number of zeros after effective number.
1 8 — 2-digit effective number.

- Units: ohm

1 R 2 ⇒ 1.2 ohm
2 — 1-digit effective number.
1 R — 2-digit effective number, decimal point indicated by R.

- Units: ohm

● Capacitors

Ex.: CE 04W 1H 2R2 M BP

CE: Type / 04W: Shape and performance / 1H: Dielectric strength / 2R2: Capacity / M: Allowable error / BP: Others

Type	Dielectric strength	Allowable error	Others
CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For change and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80% −20%	U : UL part
CP : Oil	2A : 100V		C : CSA part
CM : Mica	2B : 125V	P : +100% −0%	W : UL-CSA type
CF : Metallized	2C : 160V		F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

∗ Capacity (electrolyte only)

2 2 2 ⇒ 2200µF
2 — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: µF.

2 R 2 ⇒ 2.2µF
2 — 1-digit effective number.
2 R — 2-digit effective number, decimal point indicated by R.

- Units: µF.

∗ Capacity (except electrolyte)

2 2 2 ⇒ 2200pF=0.0022µF
2 — (More than 2) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: µF.

2 2 1 ⇒ 220pF
1 — (0 or 1) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number.

- Units: pF.

- When the dielectric strength is indicated in AC, "AC" is included after the dieelectric strength value.

PARTS LIST OF P.W.B. UNIT ASS'Y

CD PLAYER UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS			
⚠IC101,102	268 0073 905	IC ICP-N15	IC protector
IC103	960 0031 001	IC M5290FP	Linear offset
⚠IC104	DCD 2150 416	IC GL7808	Regulator +8V
IC201	960 0010 200	IC KA9220C	Optical RF servo
IC202	DCD 2150 406	IC KA9258D	Linear driver
IC203	930 1002 009	IC BA4558D	Linear ope.amp
IC301	DCD 2150 454	IC KS9282	Optical display
IC401	960 0083 402	IC CXP823P24Q/82316-3889	CPU microprocessor
IC402	DCD 2150 425	IC KIA7042P	Linear offset
IC501,502	930 1002 009	IC BA4558D	Linear ope.amp
Q101	272 0083 004	Transistor 2SB1185(E/F)	
Q104	960 0005 105	Transistor KTA1266(Y)	
Q105	960 0010 404	Transistor KTA1270(Y)	
Q106	DCD 2150 412	Transistor KTC3202(Y)	
Q107,108	269 0020 906	Transistor DTC114ES	Built in resistor
Q201	960 0010 404	Transistor KTA1270(Y)	
Q202	960 0010 705	Transistor KTC3205(Y)	
Q203	960 0010 501	Transistor KTA1273(Y)	
Q501.502	269 0099 908	Transistor DTC143TS	Built in resistor
Q503,504	S87 2990 550	Transistor DTC343TS	Built in resistor
Q505,506	269 0016 907	Transistor DTA144WS	Built in resistor
Q601	960 0005 105	Transistor KTA1266(Y)	
Q602	960 0010 608	Transistor KTC3198(GR)	
Q603	960 0005 105	Transistor KTA1266(Y)	
⚠D101-104	916 0053 008	Diode 1N4002A	Rectifier
ZD105	276 0439 906	Zener diode MTZ5.1B	5.1 V
D106,107	276 0401 002	Diode 1SS131	Switching diode
ZD108	9H3 0000 410	Zener diode MTZJ24B	24 V
D109~112	276 0375 002	Diode 1N4148M	Switching diode
ZD113,114	9H3 0000 251	Zener diode MTZ5.6B	5.6 V
D201	276 0401 002	Diode 1SS131	
D301,302	276 0401 002	Diode 1SS131	Switching diode
D601	276 0401 002	Diode 1SS131	Switching diode
D602	9H3 0000 251	Zener diode MTZ5.6B	5.6 V
D603	276 0401 002	Diode 1SS131	Switching diode
D604	9H3 0000 251	Zener diode MTZ5.6B	5.6 V
D605.606	276 0401 002	Diode 1SS131	Switching diode
D701,702	276 0401 002	Diode 1SS131	Switching diode
FLT701	960 0083 606	F.L.D. tube 10-BT-197GK	453000021001
RESISTORS			
VR201	DCD 2150 408	Semifixed resistor 4.7 kohm	C54647200210 (
VR202	DCD 2150 407	Semifixed resistor 22 kohm	C54622300210 (
VR203	DCD 2150 407	Semifixed resistor 22 kohm	C54622300210 (
J201~205	–	Carbon chip 0ohm 1/8W	RM73B2BORO
R101	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(
R103~105	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(
R106	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(
R107	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(
R108,109	241 2399 938	Carbon film 2.2 kohm 1/6W	RD14B2E222J(
R110	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(
R111	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(
R112	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(
R113	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(
R201	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R202	247 0013 984	Carbon chip 470 kohm 1/10W	RM73B--474J
R203	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R204	247 0014 941	Carbon chip 820 kohm 1/10W	RM73B--824J
R205	247 0012 969	Carbon chip 150 kohm 1/10W	RM73B--154J
R206	247 0003 949	Carbon chip 22 ohm 1/10W	RM73B--220J
R207	247 0009 901	Carbon chip 4.7 kohm 1/10W	RM73B--472J
R208	247 0010 987	Carbon chip 27 kohm 1/10W	RM73B--273J
R209	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R210	247 0004 980	Carbon chip 82 ohm 1/10W	RM73B--820J
R211,212	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R213	247 0010 961	Carbon chip 22 kohm 1/10W	RM73B--223J
R214	247 0009 969	Carbon chip 8.2 kohm 1/10W	RM73B--822J
R215	2470011 902	Carbon chip 33kohm 1/10W	RM73B--333J
R216	247 0010 961	Carbon chip 22 kohm 1/10W	RM73B--223J
R217	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R218	247 0012 969	Carbon chip 150 kohm 1/10W	RM73B--154J
R219	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R220	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473F
R221	247 0012 901	Carbon chip 82 kohm 1/10W	RM73B--823J
R222	247 0011 999	Carbon chip 75 kohm 1/10W	RM73B--753 J
R223	247 0010 929	Carbon chip 15 kohm 1/10W	RM73B--153J
R224	247 0011 960	Carbon chip 56 kohm 1/10W	RM73B--563J
R225	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473F
R226	247 0012 943	Carbon chip 120 kohm 1/10W	RM73B--124J
R227	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R228	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R229	247 0012 901	Carbon chip 82 kohm 1/10W	RM73B--823J
R230	247 0004 922	Carbon chip 47 ohm 1/10W	RM73B--470J
R231	247 0012 901	Carbon chip 82 kohm 1/10W	RM73B--823J
R232,233	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473F
R234,235	247 0011 902	Carbon chip 33 kohm 1/10W	RM73B--333J

Ref. No.	Part No.	Part Name	Remarks
R236	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R298	247 0012 927	Carbon chip 100 kohm 1/10W	RM73B--104J
R301	241 2401 994	Carbon film 27 kohm 1/6W	RD14B2E273J(5)
R302,303	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R304~306	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473F ±1%
R307	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R308	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R309	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R310	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R311	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R312	247 0018 905	Carbon chip 0 ohm 1/10W	RM73B--0R0K
R401,402	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R403,404	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R405~408	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R409	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R502	241 2060 005	Carbon film 47 ohm 1/4W	RD14B2E470J
R503,504	241 2399 938	Carbon film 2.2 kohm 1/6W	RD14B2E222J(5)
R505,506	241 2404 991	Carbon film 470 kohm 1/6W	RD14B2E474J(5)
R507,508	241 2401 994	Carbon film 27 kohm 1/6W	RD14B2E273J(5)
R509,510	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R511,512	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R513,514	241 2404 991	Carbon film 470 kohm 1/6W	RD14B2E474J(5)
R515,516	241 2397 998	Carbon film 560 ohm 1/6W	RD14B2E561J(5)
R517,518	241 2398 997	Carbon film 1.5 kohm 1/6W	RD14B2E152J(5)
R519~522	241 2400 034	Carbon film 5.6 kohm 1/6W	RD14B2E562J(5)
R523,524	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R525~528	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R529	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R601	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R602,603	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R604	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R605	241 2397 901	Carbon film 220 ohm 1/6W	RD14B2E221J(5)
R606	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R607,608	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R609	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R610,611	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R612	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
CAPACITORS			
C101,102	257 0012 050	Ceramic cap. 6800 pF/50V	CK73F1H682Z
C103	254 4256 091	Electrolytic 2200 μF/25V	CE04W1E222M
C104	254 4256 088	Electrolytic 1000 μF/25V	CE04W1E102M
C105	254 4260 061	Electrolytic 3.3 μF/50V	CE04W1H3R3M
C106	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C109	253 1174 018	Ceramic cap. 0.01 μF/16V	CK14Y1C103M
C110	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C112,113	254 4261 028	Electrolytic 100 μF/50V	CE04W1H101M

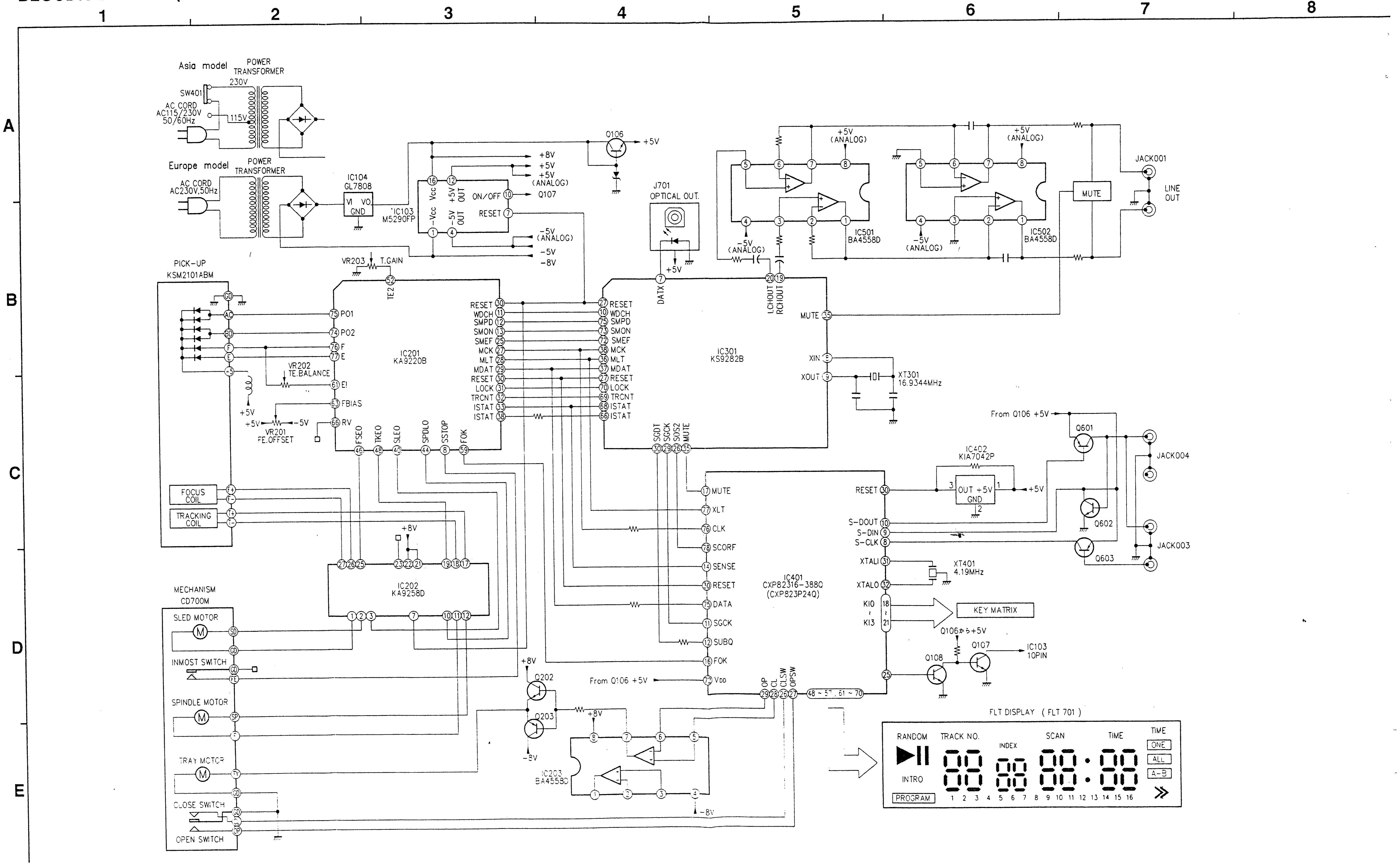
Ref. No.	Part No.	Part Name	Remarks
C114	253 1026 001	Ceramic cap. 0.047 μF/50V	CK45F1H473Z
C115	254 4261 028	Electrolytic 100 μF/50V	CE04W1H101M
C116	254 4260 087	Electrolytic 10 μF/50V	CE04W1H100M
C117	254 4256 059	Electrolytic 220 μF/25V	CE04W1E221M
C118	254 4260 087	Electrolytic 10 μF/50V	CE04W1H100M
C119	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C120	253 1026 001	Ceramic cap. 0.047 μF/50V	CK45F1H473Z
C121,122	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M
C201	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M
C202	255 1121 083	Film cap. 0.033 μF/50V	CQ93M1H333J
C203,204	254 4252 040	Electrolytic 220 μF/10V	CE04W1A221M
C205	257 0014 032	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C206	254 4252 040	Electrolytic 220 μF/10V	CE04W1A221M
C207~209	257 0012 063	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C210~212	257 0014 032	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C213	254 4260 074	Electrolytic 4.7 μF/50V	CE04W1H4R7M
C214	254 4254 022	Electrolytic 33 μF/16V	CE04W1C330M
C215	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M
C216	257 0012 005	Ceramic chip 1000 pF/50V	CK73F1H102Z
C217	257 0016 988	Ceramic chip 30 pF/50V	CC73CH1H300J (Temp.)
C218	255 1120 084	Film cap. 4700 pF/50V	CQ93M1H472J
C219	257 0014 032	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C220	257 0007 900	Ceramic chip 1000 pF/50V	CC73SL1H102J
C221	257 0014 032	Ceramic chip 0.1 μF/25V	CK73F1E104Z
C222	257 0012 050	Ceramic chip 6800 pF/50V	CK73F1H682Z
C223	257 0012 021	Ceramic chip 2200 pF/50V	CK73F1H222Z
C224	257 0013 004	Ceramic chip 0.047 μF/50V	CK73F1H473Z
C225	254 4260 016	Electrolytic 0.22 μF/50V	CE04W1HR22M
C226,227	257 0016 917	Ceramic chip 220 pF/50V	CC73CH1H221J (Temp.)
C228	257 0012 089	Ceramic chip 0.022 μF/50V	CK73F1H223Z
C229	257 0013 910	Ceramic chip 0.068 μF/50V	CK73F1H683Z
C230	254 4260 087	Electrolytic 10 μF/50V	CE04W1H100M
C231	254 4260 016	Electrolytic 0.22 μF/50V	CE04W1HR22M
C232	257 0012 063	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C233	253 9030 086	Ceramic cap. 0.022 μF/25V	CK45=1E223K
C234	254 4254 048	Electrolytic 100 μF/16V	CE04W1C101M
C235	254 4252 066	Electrolytic 470 μF/10V	CE04W1A471M
C236	257 0012 063	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C237	254 4254 048	Electrolytic 100 μF/16V	CE04W1C101M
C238	254 4256 046	Electrolytic 100 μF/25V	CE04W1E101M
C239	257 0012 063	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C241,242	254 4252 040	Electrolytic 220 μF/10V	CE04W1A221M
C243	257 0012 063	Ceramic chip 0.01 μF/50V	CK73F1H103Z
C244	253 1146 907	Ceramic 0.01 μF/50V	CK45F1H103Z
C298	254 3056 014	Electrolytic 1 μF/50V(Bipolar)	CE04D1H010MBP
C299	254 4260 016	Electrolytic 0.22 μF/50V	CE04W1HR22M
C301	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M
C302	253 1197 914	Ceramic cap. 0.1 μF/16V	CK14F1C104Z
C303	255 1122 008	Film cap. 0.047 μF/50V	CQ93M1H473J

Ref. No.	Part No.	Part Name	Remarks	
C304	255 1120 026	Film cap. 1500 pF/50V	CQ93M1H152J	
C305,306	253 3615 009	Ceramic cap. 33 pF/50V	CC45SL1H330J	
C309	253 9030 086	Ceramic cap. 0.022 μF/25V	CK45=1E223K	
C310	254 4260 032	Electrolytic 0.47 μF/50V	CE04W1HR47M	
C311	255 1121 083	Film cap. 0.033 μF/50V	CQ93M1H333J	
C401	253 9030 086	Ceramic cap. 0.022 μF/25V	CK45=1E223K	
C406	253 9030 086	Ceramic cap. 0.022 μF/25V	CK45=1E223K	
C407	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M	
C408	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M	
C409	253 9030 086	Ceramic cap. 0.022 μF/25V	CK45=1E223K	
C501,502	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M	
C503,504	254 4260 074	Electrolytic 4.7 μF/50V	CE04W1H4R7M	
C505,506	253 1055 072	Ceramic cap. 120 pF/50V	CK45B1H121K	
C507,508	255 1121 096	Film cap. 0.039 μF/50V	CQ93M1H393J	
C509,510	255 1120 042	Film cap. 2200 pF/50V	CQ93M1H222J	
C511,512	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M	
C513,514	253 1001 000	Ceramic cap. 330 pF/50V	CK45B1H331K	
C515,516	254 3056 043	Electrolytic4.7 μF/50V(Bipolar)	CE04D1H4R7MBP	
C517,518	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K	
C519	254 4260 087	Electrolytic 10 μF/50V	CE04W1H100M	
C601	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K	
C602	253 1001 000	Ceramic cap. 330 pF/50V	CK45B1H331K	
C603,604	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K	
C701	253 1197 914	Ceramic cap. 0.01μF/16V	CK14F1C104Z	
OTHER PARTS				Q'ty
	—	(P.W.board)		(1)
L201,202	960 0010 307	Inductor 10 mH	D33010070052	2
SW701-707	LA2 60C9 008	Tact switch	G18000027000	7
⚠PT101	960 0083 525	Power transformer	820048041007 Europe model	1
⚠PT101	960 0083 525	Power transformer	820048041008 Asia model	1
JK001	960 0010 006	2 P pin jack	G60102013001	1
JK002	269 0098 006	Optical	E10013200001	1
JK003,004	960 0004 407	Mini jack	G40103110201	2
⚠SW001	960 0062 407	Slide switch (Vol.sel.switch)	G06000120024 Asia model only	1
XT301	DCD 2150 403	Crystal 16.9344 MHz	E80016R93401	1
XT401	399 0107 007	Ceramic resonator CST4.19MGW	E8304R100000	1

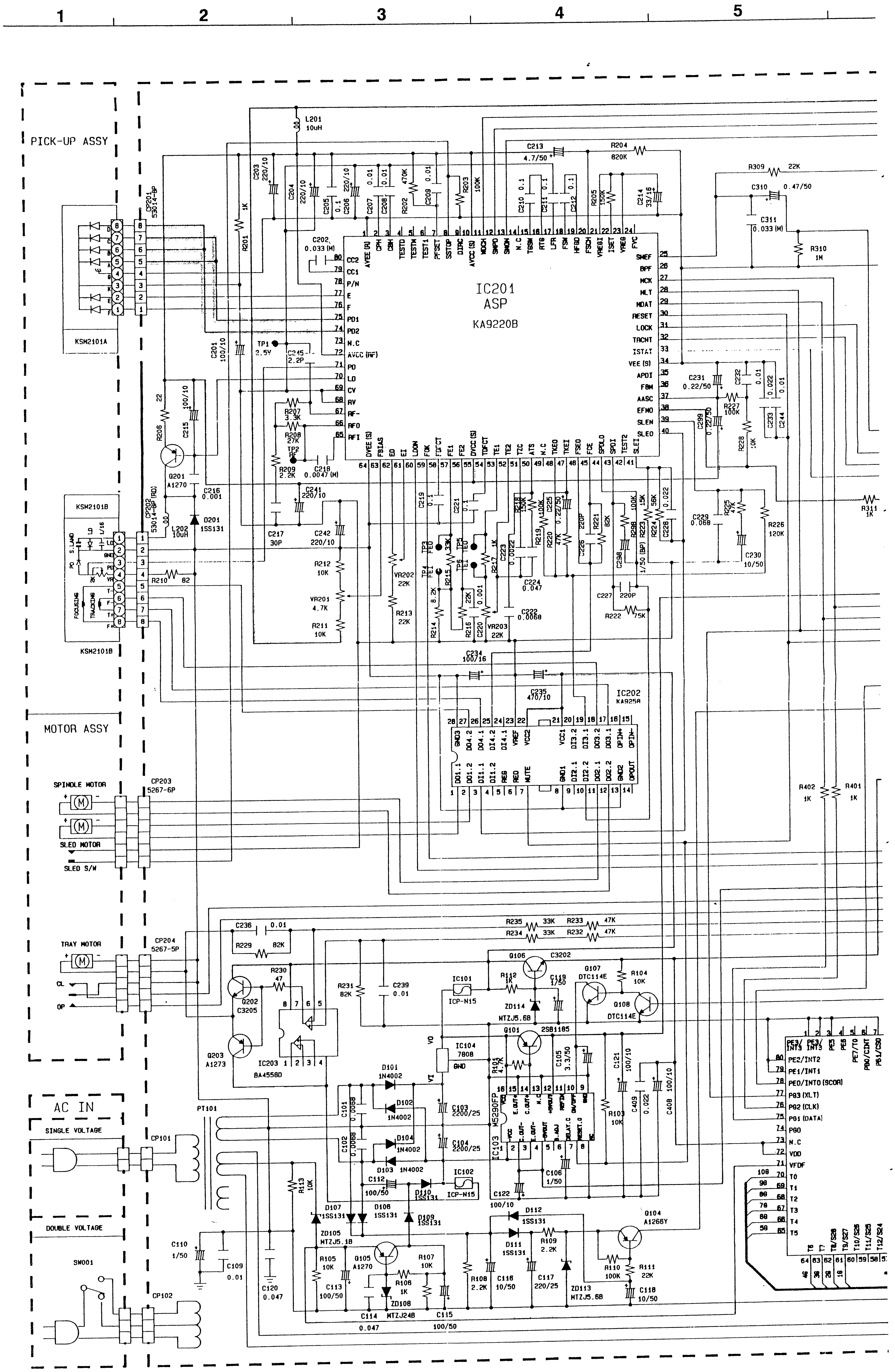
Ref. No.	Part No.	Part Name	Remarks	Q'ty
⚠CP101	—	Connector holder 2 P	L10835310200	1
CP201	—	Connector wire 8 P Red	L10153014082	1
CP202	—	Connector wire 8 P	L10153014081	1
CP203	—	Connector holder 6 P	L10252670601	1
CP204	—	Connector holder 5 P	L10252670501	1
CP401	—	26 P FP cable	L13152045261	1
CP701	—	Connector wire 3 P 160 mm	L00007590001	1
CP701	960 0011 005	26 P FP cable	L13152044261	1
TP001	—	Test pin	L42100004000	4
TP005,006	—	Test pin (2P)	L42100005000	1
	—	Heat sink	212002008601	1
FLH701	960 0007 200	FLD holder	432002015601	1
J001~096	—	Jumper wire	L40200002002	96
J301,302	—	Jumper wire		2
CP102B	—	Wire Black L=160 mm	L000016122001 Asia model only	1
CP102R	—	Wire Red L=160 mm	L000016122201 Asia model only	1
CP102W	—	Wire White L=160 mm	L000016122901 Asia model only	1

CD PLAYER SECTION

BLOCDK DIAGRAM


1
2
3
4
5
6
7
8
A
B
C
D
E
Asia model
POWER TRANSFORMER
230V
SW401
AC CORD AC115/230V 50/60Hz
115V
Europe model
POWER TRANSFORMER
AC CORD AC230V,50Hz
IC104 GL7808
VI VO GND
IC103 M5290FP
16 Vcc
12 +5V OUT
-Vcc 1
-5V OUT 4
ON/OFF 10
RESET 7
+8V
+5V
+5V (ANALOG)
Q107
-5V (ANALOG)
-5V
-8V
Q106
+5V
J701 OPTICAL OUT.
+5V
PICK-UP KSM2101ABM
VR203 T.GAIN
TE2 52
75 PO1
74 PO2
76 F
77 E
61 E!
63 FBIAS
66 RV
VR202 TE.BALANCE
VR201 FE.OFFSET
+5V
-5V
IC201 KA9220B
RESET 30
WDCH 11
SMPD 12
SMON 13
SMEF 25
MCK 27
MLT 28
MDAT 29
RESET 30
LOCK 31
TRCNT 32
ISTAT 33
ISTAT 38
FSEO 46
TKEO 48
SLEO 43
SPDLO 44
SSTOP 8
FOK 59
IC301 KS9282B
27 RESET
10 WDCH
75 SMPD
73 SMON
72 SMEF
38 MCK
36 MLT
37 MDAT
27 RESET
70 LOCK
69 TRCNT
68 ISTAT
66 ISTAT
DATX 7
LCHOUT 20
RCHOUT 19
MUTE 35
XIN 8
XOUT 9
XT301 16.9344MHz
SQDT 30
SQCK 29
SQS2 26
MUTE 35
+5V (ANALOG)
IC501 BA4558D
-5V (ANALOG)
IC502 BA4558D
MUTE
JACK001
LINE OUT
FOCUS COIL
TRACKING COIL
F+
F-
T+
T-
+8V
IC202 KA9258D
27 26 25
23 22 21
19 18 17
1 2 3 7 10 11 12
MECHANISM CD700M
SLED MOTOR
INMOST SWITCH
SPINDLE MOTOR
TRAY MOTOR
CLOSE SWITCH
OPEN SWITCH
+8V
Q202
Q203
-8V
+8V
IC203 BA4558D
-8V
From Q106 +5V
IC401 CXP82316-388Q (CXP823P24Q)
17 MUTE
77 XLT
76 CLK
78 SCORF
14 SENSE
30 RESET
75 DATA
11 SGCK
12 SUBQ
16 FOK
72 VDD
OP 29
CL 28
CLSW 26
OPSW 27
48~57, 61~70
RESET 30
S-DOUT 10
S-DIN 9
S-CLK 8
XTALI 31
XTALO 32
KI0 ~ KI3 18 ~ 21
XT401 4.19MHz
KEY MATRIX
IC402 KIA7042P
OUT +5V GND
+5V
From Q106 +5V
Q601
Q602
Q603
JACK004
JACK003
Q106から+5V
Q107
Q108
IC103 10PIN
25
FLT DISPLAY (FLT 701)
RANDOM
TRACK NO.
INDEX
SCAN
TIME
TIME
ONE
ALL
A-B
INTRO
PROGRAM
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SCHEMATIC DIAGRAM


1
2
3
4
5
PICK-UP ASSY
KSM2101A
KSM2101B
CP201 53014-8P
CP202 53014-8P(RD)
IC201
ASP
KA9220B
IC202 KA9258
MOTOR ASSY
SPINDLE MOTOR
SLED MOTOR
SLED S/W
CP203 5267-6P
TRAY MOTOR
CL
OP
CP204 5267-5P
Q201 A1270
Q202 C3205
Q203 A1273
IC203 BA4558D
IC101 ICP-N15
IC102 ICP-N15
IC104 7808
IC103 M5290FP
Q101 2SB1185
Q104 A1266Y
Q105 A1270
Q106 C3202
Q107 DTC114E
Q108 DTC114E
D101 1N4002
D102 1N4002
D103 1N4002
D104 1N4002
ZD105 MTZJ5.1B
ZD108 MTZJ24B
ZD113 MTZJ5.6B
ZD114 MTZJ5.6B
AC IN
SINGLE VOLTAGE
DOUBLE VOLTAGE
SW001
CP101
CP102
PT101
L201 10uH
L202 10uH
R309 22K
R310 1M
R311 1K
R401 1K
R402 1K
PE3/INT3
PE2/INT2
PE1/INT1
PE0/INT0 (SCOR)
P83 (XLT)
P82 (CLK)
P81 (DATA)
P80
N.C
VDD
VFDF
T0
T1
T2
T3
T4
T5

NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM

ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD

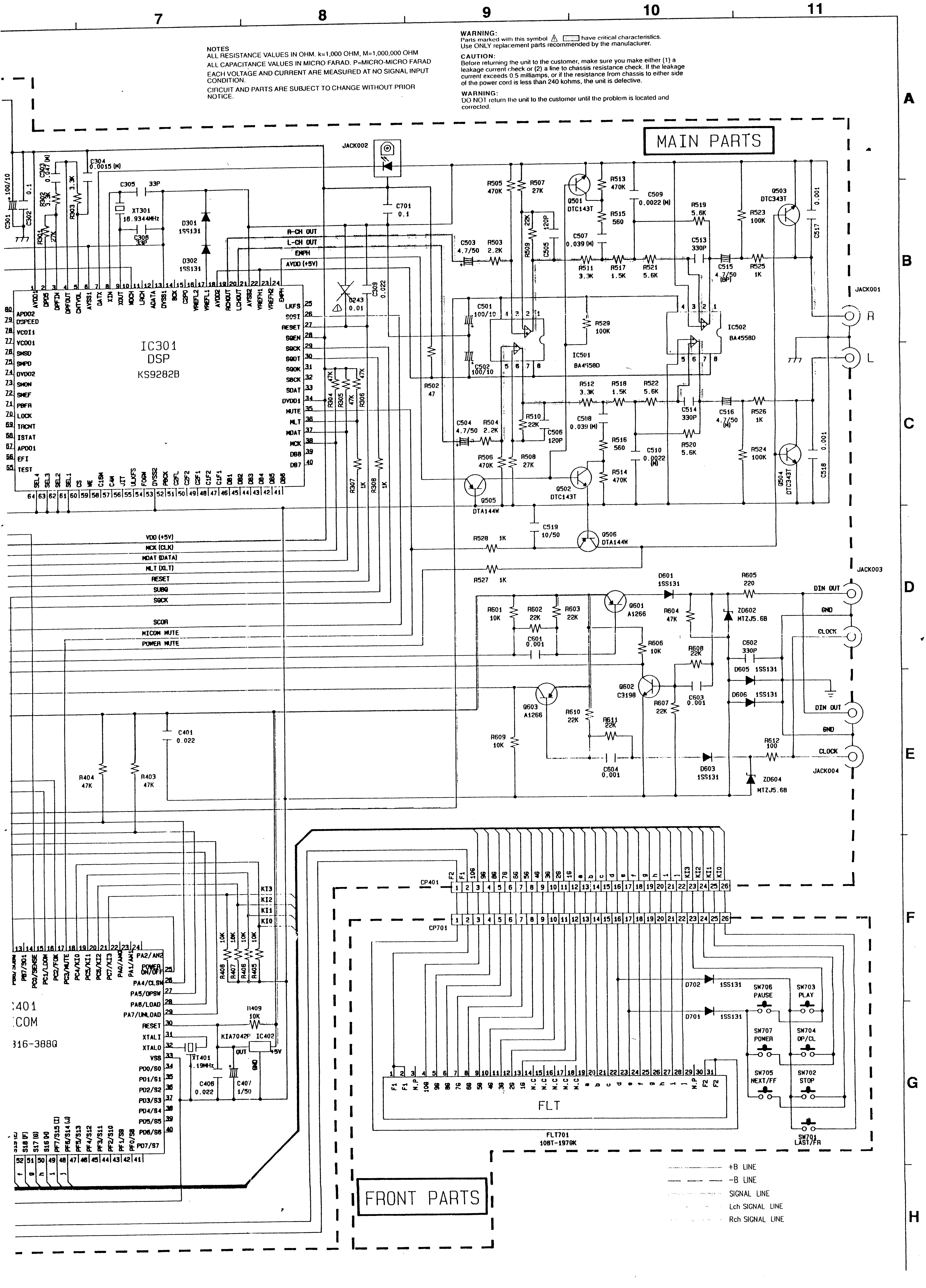
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.

CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

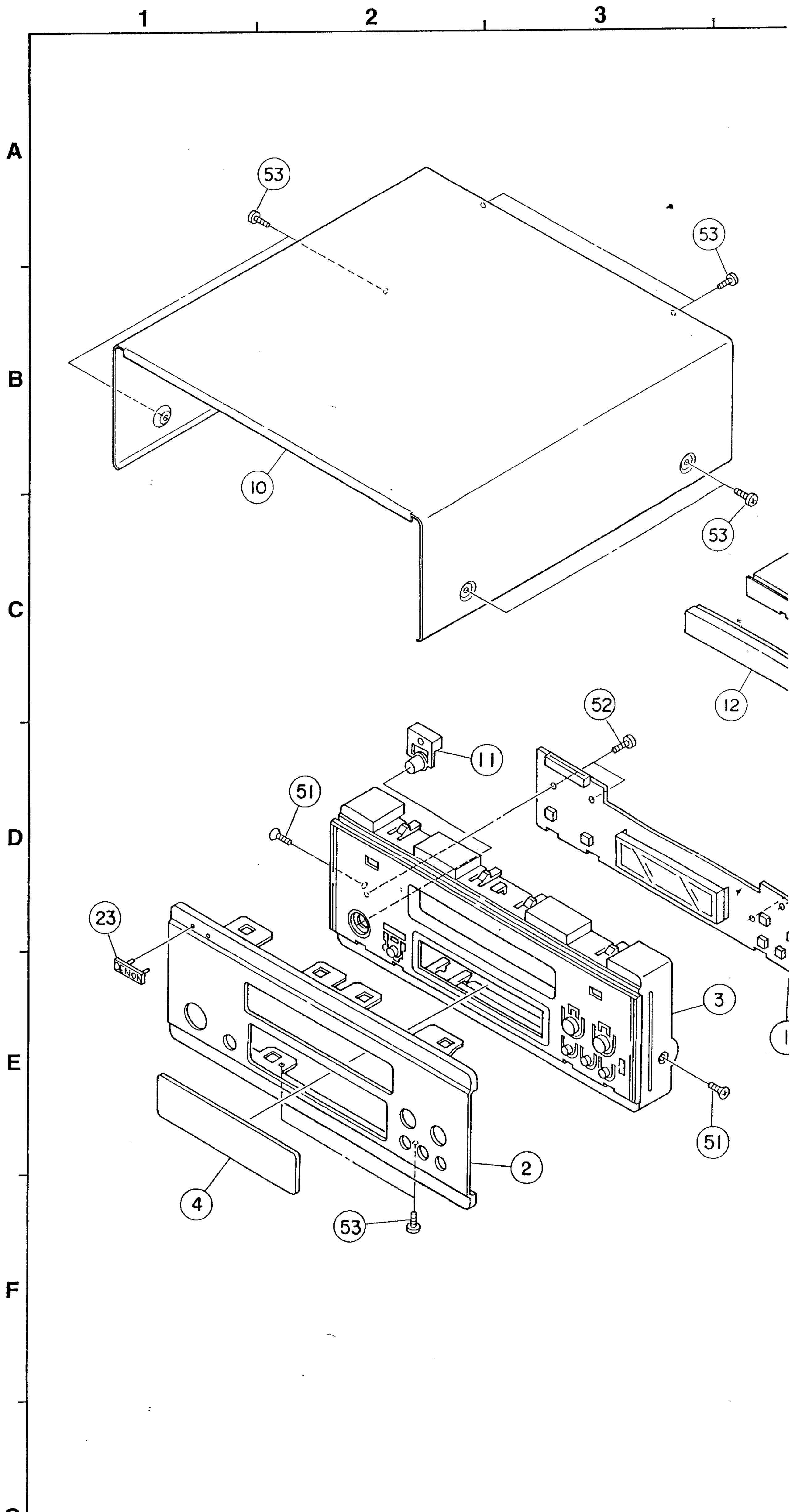

7
8
9
10
11
A
B
C
D
E
F
G
H
MAIN PARTS
JACK002
IC301
DSP
KS9282B
XT301
16.9344MHz
D301
1SS131
D302
1SS131
R-CH OUT
L-CH OUT
EMPH
AVDD (+5V)
IC501
BA4558D
IC502
BA4558D
Q501
DTC143T
Q502
DTC143T
Q503
DTC343T
Q504
DTC343T
Q505
DTA144W
Q506
DTA144W
JACK001
R
L
VDD (+5V)
MCK (CLK)
MDAT (DATA)
MLT (XLT)
RESET
SUBQ
SQCK
SCOR
MICOM MUTE
POWER MUTE
JACK003
DIN OUT
GND
CLOCK
JACK004
Q601
A1266
Q602
C3198
Q603
A1266
ZD602
MTZJ5.6B
ZD604
MTZJ5.6B
CP401
CP701
IC401
COM
316-388Q
KIA7042P
IC402
XT401
4.19MHz
FLT
FLT701
10BT-197GK
SW706
PAUSE
SW703
PLAY
SW707
POWER
SW704
OP/CL
SW705
NEXT/FF
SW702
STOP
SW701
LAST/FR
D701
1SS131
D702
1SS131
FRONT PARTS
+B LINE
-B LINE
SIGNAL LINE
Lch SIGNAL LINE
Rch SIGNAL LINE

CD PLAYER SECTION

PARTS LIST OF EXPLODED VIEW
CD PLAYER SECTION(UCD-F88)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	Main P.W.B. unit		1s
1-1	—	Main P.W.B. unit	702802108003 Asia model	(1)
1-1	11111111 92	Main P.W.B. unit	702802108002 Europe and U.K.model	(1)
1-2	—	Front P.W.B. unit	702802108101	(1)
1-3	—	Voltage sei P.W.B.unit	Asia model	(1)
2	960 0082 801	Front panel	306702089801	1
3	960 0082 908	Inner panel	321702015101	1
4	960 0083 208	Window	507702039201	1
5	960 0003 505	Foot cushion	405002007501	4
6	960 0003 408	Front foot	400700006101	2
7	960 0003 204	Rear foot	400000060101	2
8	960 0009 208	Chassis	320002004601	1
9	960 0083 017	Rear panel	320702005612 Asia model	1
9	960 0083 020	Rear panel	320702005610 Europe and U.K.model	1
10	960 0006 308	Top cover	300002009601	1
11	960 0081 802	Power button	509702002103	1
12	960 0083 101	Loader panel	431702044101	1
13	960 0059 106	CD Mechanism Ass'y	803800090006	1
14	960 0003 301	Supporter P.W.B.	407000160101	3
15	960 0009 402	Mecha holder	400002002101	4
⚠ 17	960 0003 602	Cord bush	438000018000	1
⚠ 18	960 0032 301	AC Cord	L06100041001	1
⚠ 19	960 0083 512	Power transformer	820048041008 Asia model	1
⚠ 19	960 0083 525	Power transformer	820048041007 Europe and U.K.model	1
20	960 0010 006	2P Pin jack	JACK001	1
21	269 0098 006	Optucal terminal	JACK002	1
22	960 0004 407	Mini jack ϕ3.5	JACK003,004	2
23	960 0079 209	DENON Badge	563000042801	1
⚠ 27	960 0062 407	Voltage selector	Asia model only	1
51	960 9000 130	Screw 3x8 Btite BK/FH	B020030083F1	2
52	960 9000 114	Screw 3x8 Btite ZNY/BH	B020030081B1	7
53	960 9000 208	Screw 3x8 Btite BK/BH	B020030083B1 Asia model	19
53	960 9000 208	Screw 3x8 Btite BK/BH	B020030083B1 Europe and U.K.model	17
54	960 9000 156	Screw 3x17 Btite ZNY/BH	B020030171B1	7
55	960 9000 169	Screw 4x8 Ctite ZNY/BH	B020940081B1	2

EXPLODED VIEW



G

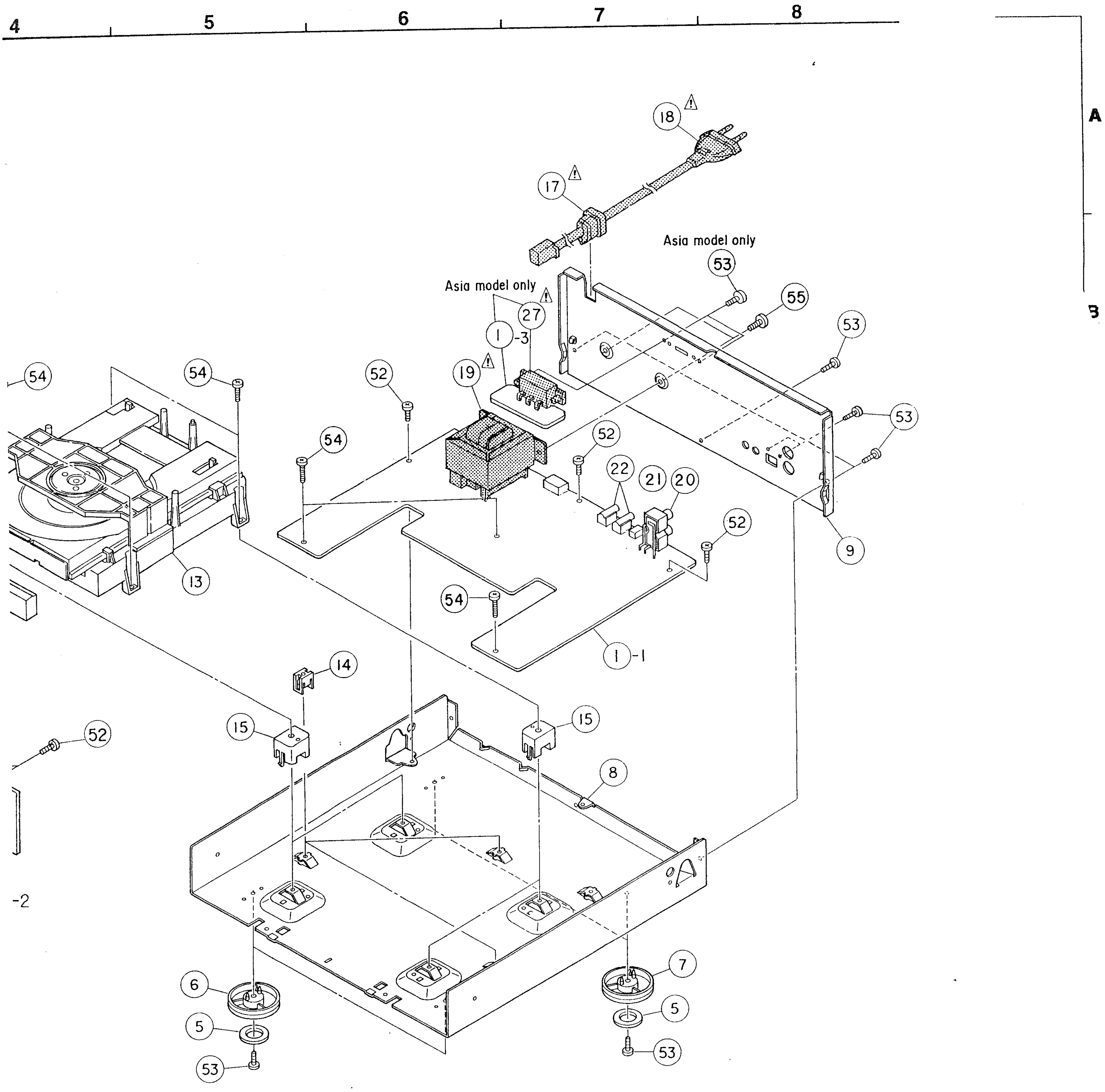
H

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

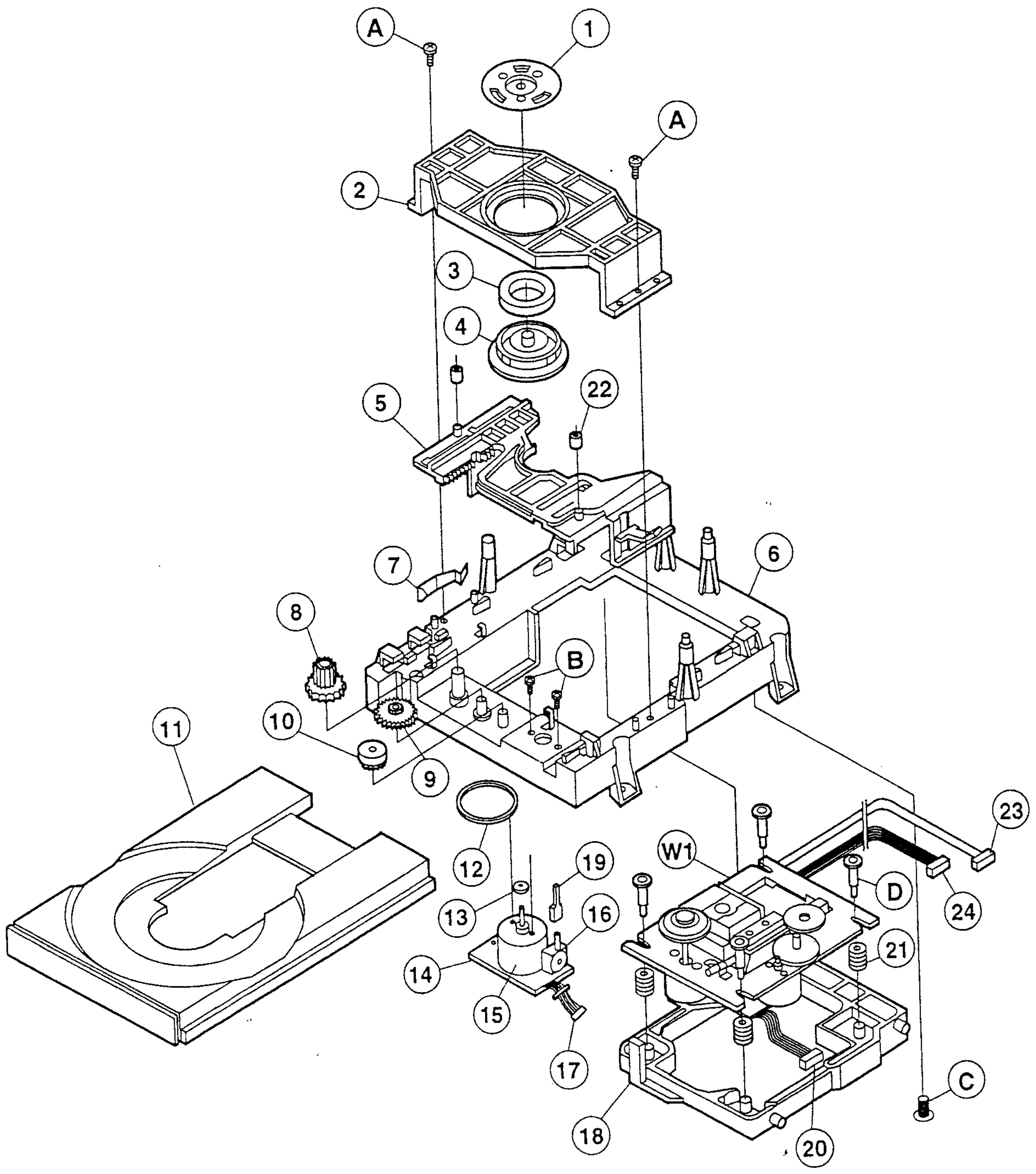

A
B
Asia model only
Asia model only
1 -3
1 -1
-2

DISASSEMBLY OF CD MECHANISM

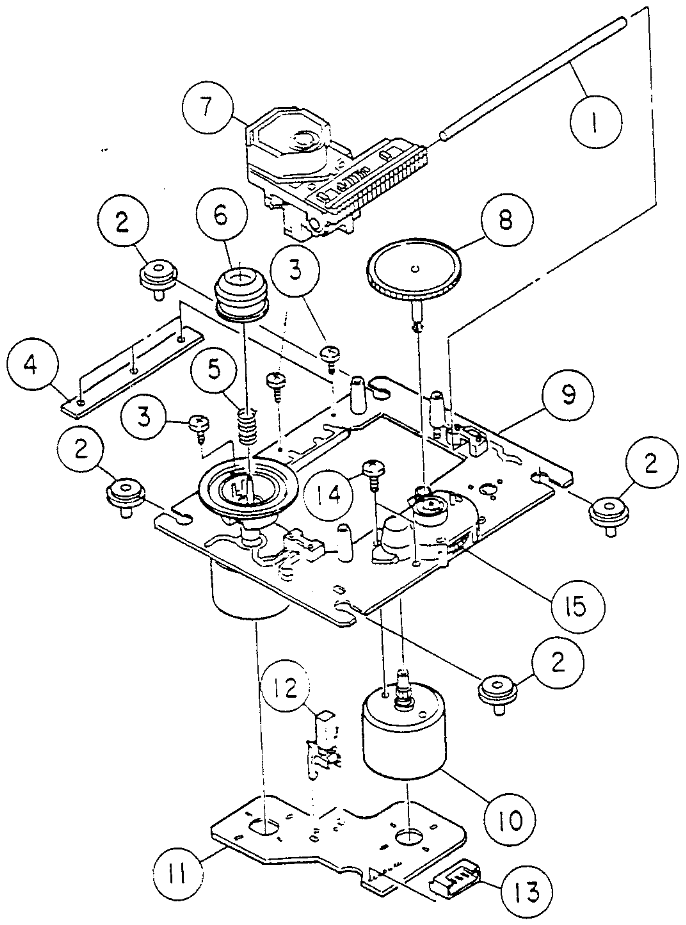
1 2 3 4 5 6

A B C D E

LOADER SECTION



TRAVERSE SECTION



PARTS LIST OF MECHANISM UNIT

TRAVERSE SECTION (Part No.:960 0011 102)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	S49 1756 501	Slide shaft		1
2	S26 2553 801	Insulator (S)		4
3	S26 4138 601	Tapping screw 2x5		6
4	–	Bracket		1
5	S26 2519 101	Coil spring		1
6	S26 2547 701	Center ring		1
7	499 0171 003	Optical pick up KSS210A		1
8	S26 2518 802	Gear (A)		1
9	SX2 6251 331	T/T motor chassis Ass'y		1
10	SX2 6251 321	Gear motor Ass'y		1
11	S16 3967 812	P.W.board Ass'y		1
12	S15 7208 511	Leaf switch		1
13	S15 6472 211	Connector pin		1
14	S76 2125 515	Screw 2x3 +P		1
15	S26 2608 101	Gear (B)		1

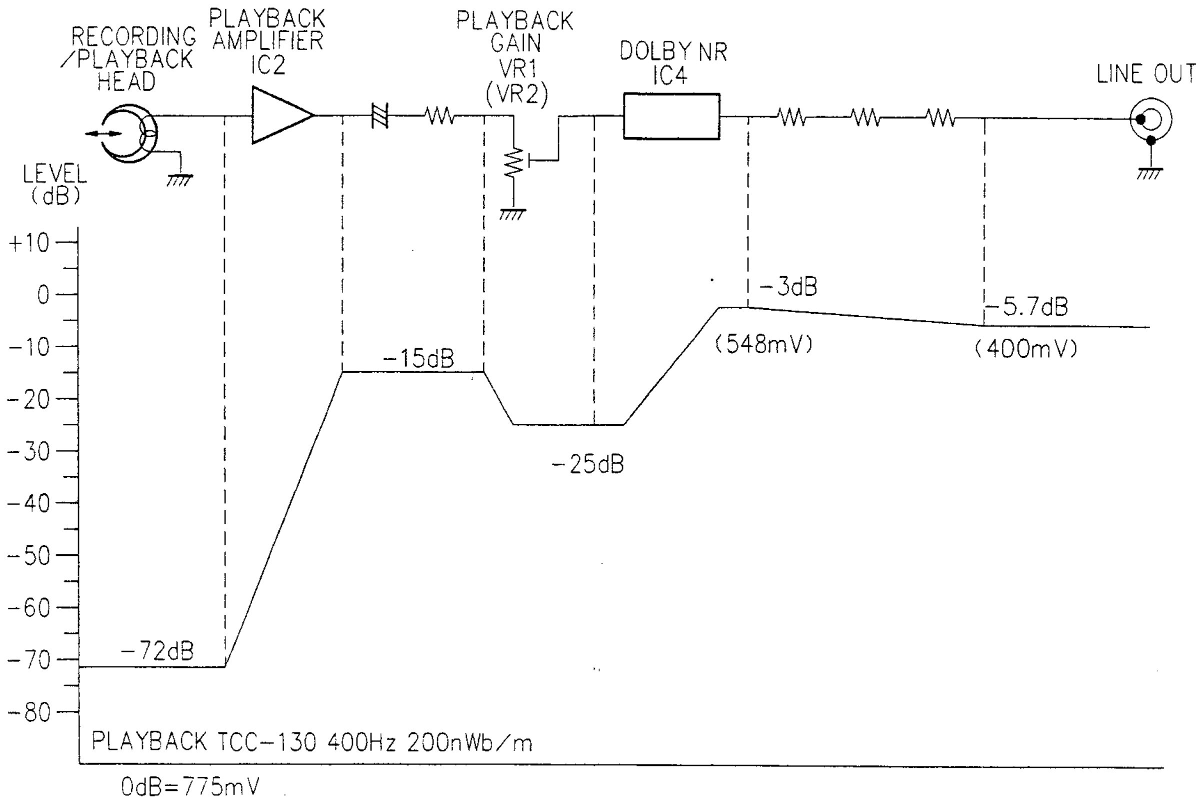
LOADER MECH. SECTION

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	960 0046 902	Clamper plate	447000406000	1
2	960 0046 106	Flapper	270000036000	1
3	960 0047 202	Magnet (‡V)	7600GZ3400L1	1
4	960 0046 601	Clamper(‡U)	433000043000	1
5	960 0046 708	Frame guide	435000642000	1
6	960 0046 203	Mech. base	320000510000	1
7	960 0046 407	Rack spring	372000336000	1
8	960 0045 806	Load gear	247000058000	1
9	960 0045 602	Center gear	247000045000	1
10	960 0045 709	Pulley gear	247000046000	1
11	960 0047 008	Tray	460000019001	1
12	960 0045 903	Tray belt	249000021000	1
13	960 0046 009	Motor pulley	250000008000	1
14	960 0047 105	Motor P.W.board	702001087000	1
15	960 0045 408	DC motor	RF-500TB 14415 G70000016001	1
16	960 0041 703	Leaf switch	G22000001000	1
17	–	Connector wire -5P	130 mm	1
18	960 0046 300	Feed frame	321000513000	1
19	960 0046 504	Holder	432000214000	1
20	–	Connector wire -6P	150 mm	1
21	960 0045 505	Insulator	124000001000	4
22	960 0046 805	Stopper	438000059000	1
23	–	Connector wire -8P	170 mm	1
24	–	Connector wire -8P	190 mm	1
25				
A	960 9000 318	Screw 3x10 B tite	B020HF6103B1	2
B	960 9000 305	Screw 2.6x5	B000HD5051B2	2
C	960 9000 321	Screw 3x8	1500HZ0780L1	1
D	960 9000 334	Screw 12.5x18.5	150000090000	4
W1	960 0011 102	CD mechanism	KSM-2101AB	1

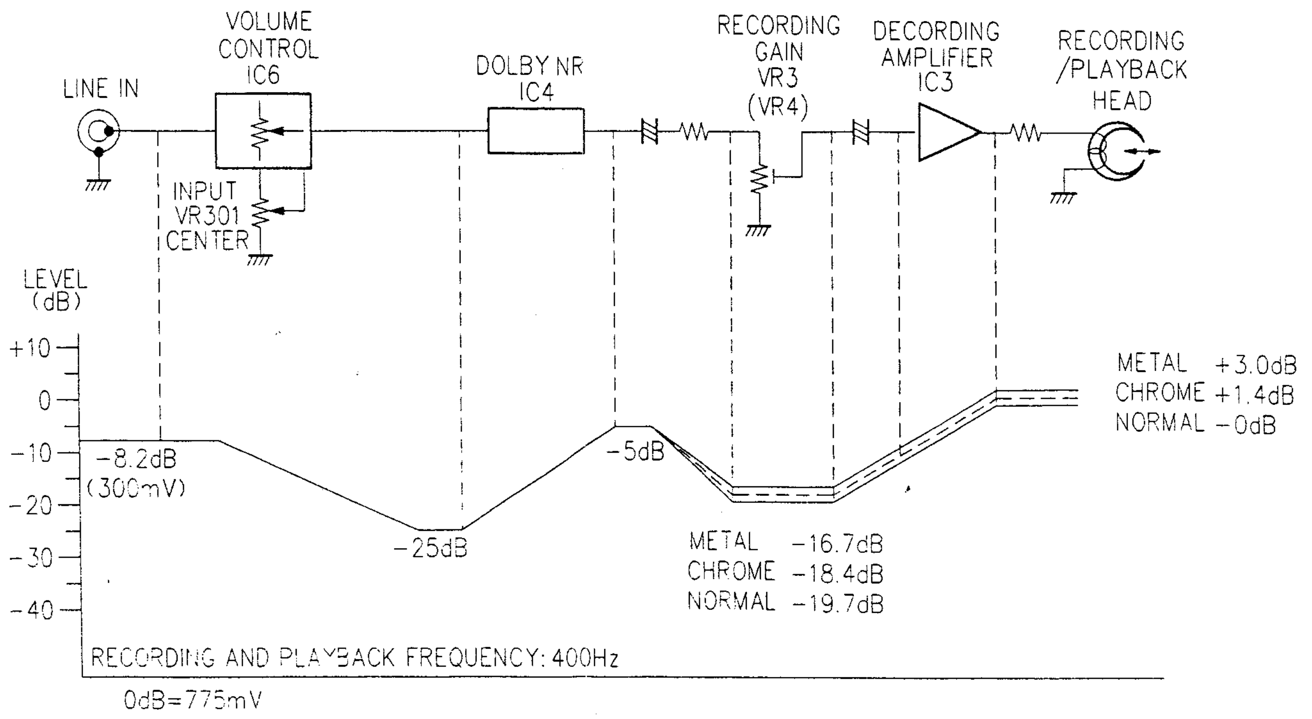
CASSETTE DECK SECTION

LEVEL DIAGRAM

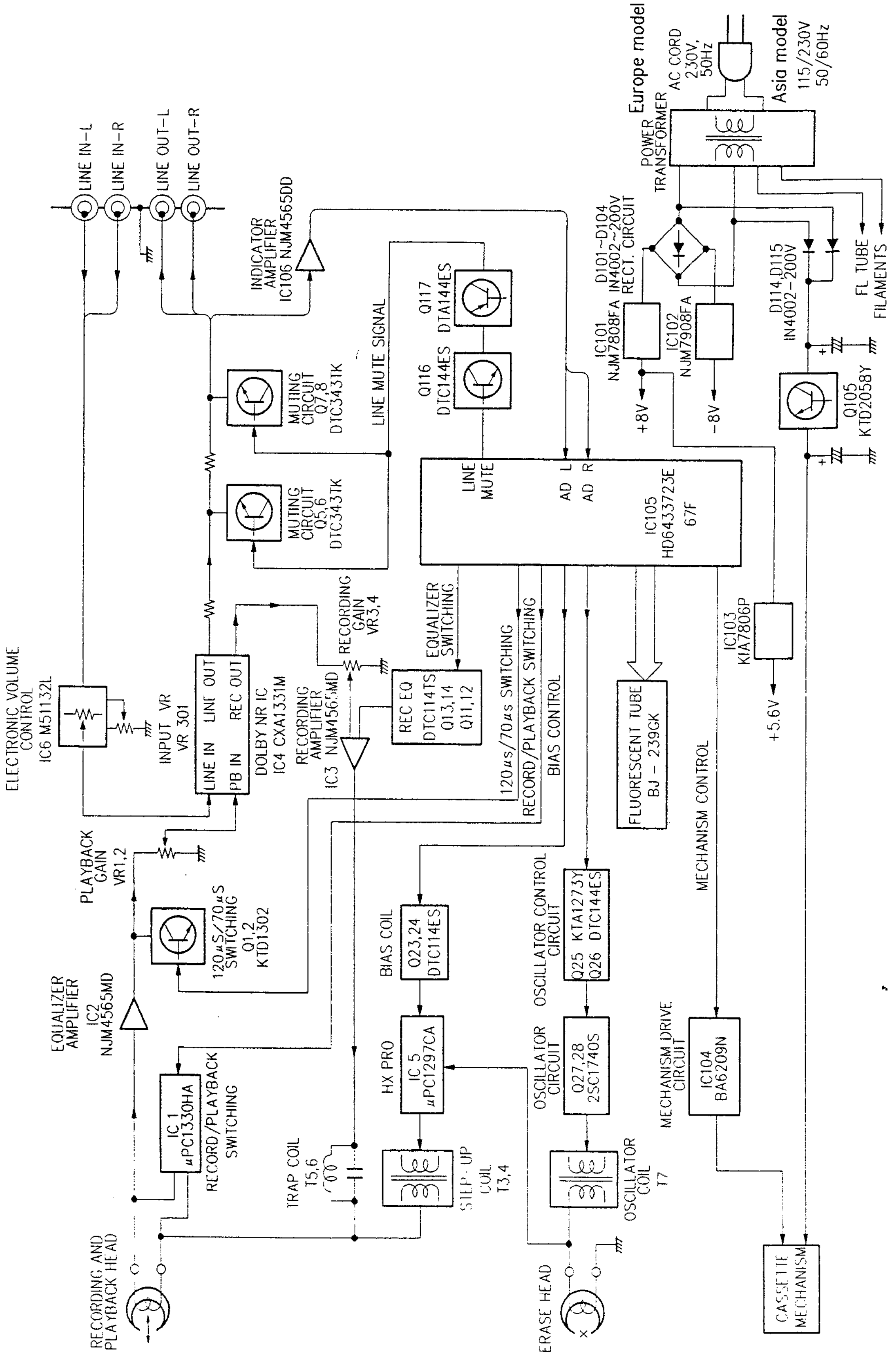
PLAYBACK SYSTEM


RECORDING /PLAYBACK HEAD
PLAYBACK AMPLIFIER IC2
PLAYBACK GAIN VR1 (VR2)
DOLBY NR IC4
LINE OUT
LEVEL (dB)
+10
0
-10
-20
-30
-40
-50
-60
-70
-80
-72dB
-15dB
-25dB
-3dB
(548mV)
-5.7dB
(400mV)
PLAYBACK TCC-130 400Hz 200nWb/m
0dB=775mV

RECORDING SYSTEM


LINE IN
VOLUME CONTROL IC6
INPUT VR301 CENTER
DOLBY NR IC4
RECORDING GAIN VR3 (VR4)
DECORDING AMPLIFIER IC3
RECORDING /PLAYBACK HEAD
LEVEL (dB)
+10
0
-10
-20
-30
-40
-8.2dB (300mV)
-25dB
-5dB
METAL -16.7dB
CHROME -18.4dB
NORMAL -19.7dB
METAL +3.0dB
CHROME +1.4dB
NORMAL -0dB
RECORDING AND PLAYBACK FREQUENCY: 400Hz
0dB=775mV

BLOCK DIAGRAM

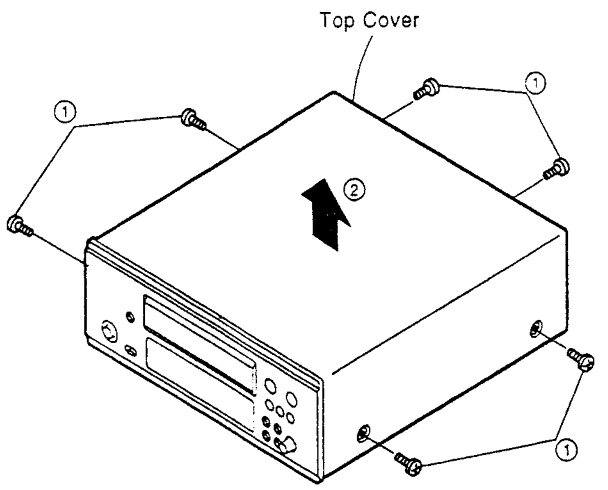

1
2
3
4
5
6
7
8
A
B
C
D
E
LINE IN-L
LINE IN-R
LINE OUT-L
LINE OUT-R
INDICATOR AMPLIFIER IC106 NJM4565DD
MUTING CIRCUIT Q7,8 DTC343TK
MUTING CIRCUIT Q5,6 DTC343TK
LINE MUTE SIGNAL
Q116 DTC144ES
Q117 DTA144ES
ELECTRONIC VOLUME CONTROL IC6 M51132L
INPUT VR VR 301
LINE IN
LINE OUT
PB IN
REC OUT
DOLBY NR IC IC4 CXA1331M
RECORDING AMPLIFIER IC3 NJM4565MD
RECORDING GAIN VR3,4
REC EQ DTC114TS Q13,14 Q11,12
EQUALIZER SWITCHING
LINE MUTE
AD L
AD R
IC105 HD6433723E 67F
120µs/70µs SWITCHING
RECORD/PLAYBACK SWITCHING
BIAS CONTROL
FLUORESCENT TUBE BJ - 239GK
MECHANISM CONTROL
IC103 KIA7806P
+5.6V
Europe model
AC CORD 230V, 50Hz
Asia model
115/230V 50/60Hz
POWER TRANSFORMER
D101~D104 IN4002~200V RECT. CIRCUIT
IC101 NJM7808FA
IC102 NJM7908FA
+8V
-8V
D114,D115 IN4002~200V
FL TUBE FILAMENTS
Q105 KTD2058Y
PLAYBACK GAIN VR1,2
120µS/70µS SWITCHING Q1,2 KTD1302
EQUALIZER AMPLIFIER IC2 NJM4565MD
IC 1 µPC1330HA
RECORD/PLAYBACK SWITCHING
RECORDING AND PLAYBACK HEAD
TRAP COIL T5,6
BIAS COIL
Q23,24 DTC114ES
HX PRO
IC 5 µPC1297CA
STEP-UP COIL T3,4
OSCILLATOR CONTROL CIRCUIT
Q25 KTA1273Y
Q26 DTC144ES
OSCILLATOR CIRCUIT
Q27,28 2SC1740S
OSCILLATOR COIL T7
ERASE HEAD
MECHANISM DRIVE CIRCUIT
IC104 BA6209N
CASSETTE MECHANISM

DISASSEMBLY PROCEDURES

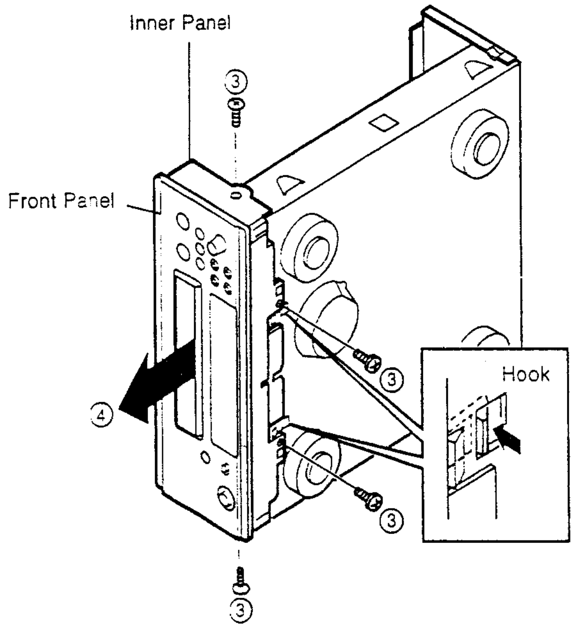
(Assembly is performed in the reverse order.)

1. Top Cover and Front Panel

① Remove 6 screws mounting on the Top Cover.
② Detach the Top Cover in the arrow direction.

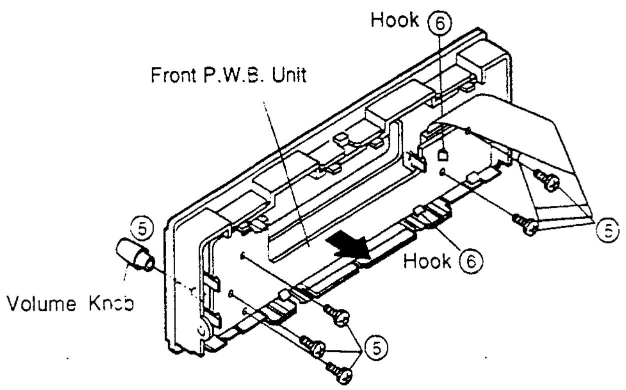

Top Cover
①
②
①
①

③ Remove 2 each screws fastening the Front Panel on the bottom and both side.
④ While releasing 2 hooks of the Inner Panel from the chassis, pull toward arrow direction and detach the Front Panel and the Inner Panel as a whole.


Inner Panel
③
Front Panel
③
Hook
④
③
③

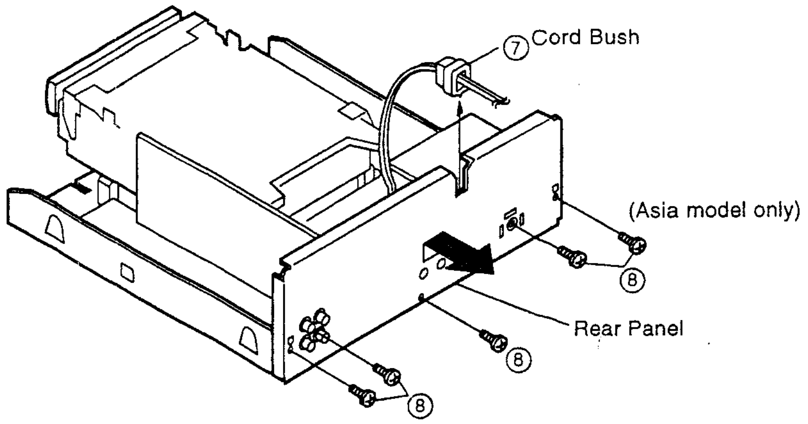
2. Front P.W.B. Unit

⑤ Pull out the Volume Knob, and remove 4 screws fastening the Front P.W.B. Unit.
⑥ While releasing 11 hooks, detach the Front P.W.B. Unit in the arrow direction.


Hook ⑥
Front P.W.B. Unit
⑤
Volume Knob
Hook ⑥
⑤
⑤

3. Rear Panel

⑦ Remove the Cord Bush from the Rear Panel.
⑧ Remove 5 screws (Europe model) / 7 screws (Asia model) fixing the Rear Panel, then detach the Rear Panel in the arrow direction.

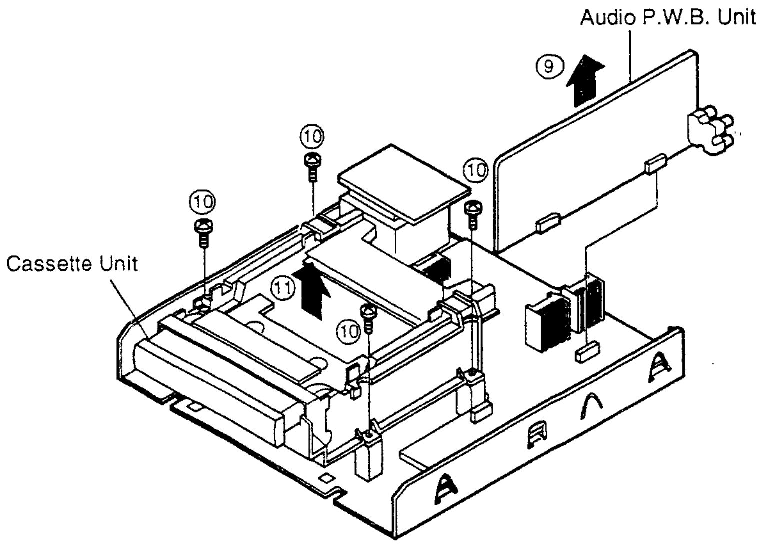

⑦ Cord Bush
(Asia model only)
⑧
Rear Panel
⑧
⑧

4. Audio P.W.B. Unit

⑨ Pull out the Audio P.W.B. Unit from connector as shown in figure.

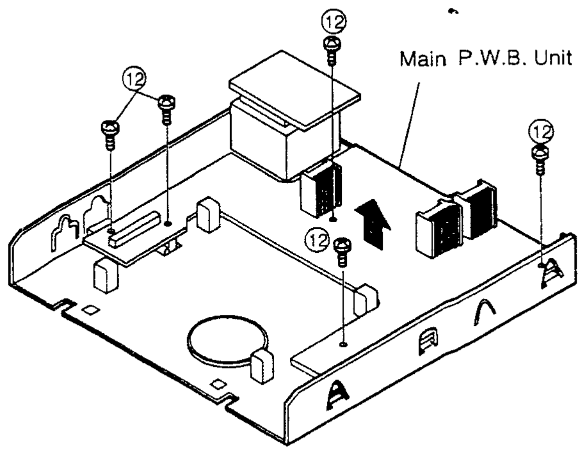
5. Cassette Unit

⑩ Remove 4 screws mounting the Cassette Unit on the chassis.
⑪ Detach the Cassette Unit in the arrow direction.


Audio P.W.B. Unit
⑨
⑩
⑩
⑩
Cassette Unit
⑪
⑩

6. Main P.W.B. Unit

⑫ Remove 4 screws fastening the Main P.W.B. Unit and detach the Main P.W.B. Unit in the arrow direction.


⑫
Main P.W.B. Unit
⑫
⑫
⑫

CASSETTE DECK SECTION

ADJUSTMENTS

Adjusting and Checking the Mechanism Section

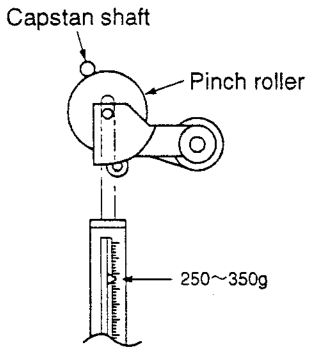
1. Replacement of the pinch roller

Before replacing the pinch roller, clean the tape contact surface of the pinch roller and the tape contact surface of the capstan shaft. After replacement, run a C-90 tape without a pad and check for the presence of tape curl at the tape guide portion of the head.

2. Checking the pinch roller pressure

Set to the playback condition and hook a bar-type spring scale to the bracket above the center line of the pinch roller. Pull the pinch roller away from the capstan shaft, then allow the pinch roller to come into contact with the capstan shaft and check that the reading of the bar-type spring scale is between 250 g and 350 g when the pinch roller starts to rotate.

Replace the pinch roller when the value falls outside of the specified range.



3. Replacement of the recording/playback head assembly

Perform this procedure after removing the front panel.

3-1 Removal of the head assembly.

(1) Remove the 2 head base fastening screws.

(2) Remove the head base from the reed holder and the wire connector.

3-2 Mounting the recording/playback head assembly

Perform by following the steps of Section 3-1 Removal of the head assembly in reverse.

4. Adjustment of the recording/playback head

Azimuth adjustment

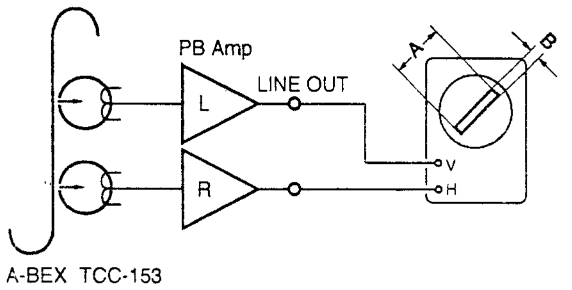
Load side A of the A-BEX TCC-153 test tape facing forward, and adjust.

(1) Play in the FWD direction and turn the azimuth adjustment nut for the FWD side so that the Lissajous's figure becomes maximum at (A) and minimum at (B).

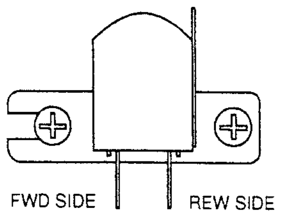
(2) Play in the REW direction and turn the azimuth adjustment nut for the REW side as adjusting the FWD side method.

(3) Adjust (1) and (2) again.

(4) Apply screw lock to the adjustment locations.



REC/PB HEAD



5. Checking the winding torque

Load a cassette type torque meter (Sony TW2111A at the FWD side) and check that the reading of the torque meter during playback is 30 to 70 g-cm at the center value.

When outside of the specified value range, check the voltage of the reel motor (approx. 4 V). When the voltage value is low, the torque is weak, and when when high, the torque is strong.

6. Checking the back tension torque at the time of recording and playback

Load a cassette type torque meter (Sony TW2111A at the FWD side) and check that the reading of the torque meter during playback is 2 to 6 g-cm and that there is no unevenness.

7. Checking the FF and REW torque

Load a cassette type torque meter (Sony TW2231) and check that the value indicated by the torque meter for winding and rewinding is between 90 and 180 g-cm.

8. Checking the FF and REW time

Load a DENON HD-X/60 cassette tape, and check that the time for FF and REW is between 80 and 110 seconds. When outside of the specified range, check Steps 5 and 6.

9. Checking the erroneous erasure prevention, and the metal and chrome switch operations

Check that detection lever is operating the switch properly depending upon the presence or absence of a hole.

Adjusting and Checking the Electrical Section

Measuring instruments needed for the adjustments

(1) Low frequency oscillator
(2) Variable resistance attenuator
(3) Electronic voltmeter
(4) Oscilloscope
(5) Frequency counter
(6) Adjustment screwdriver
(7) 4-sided adjustment rod for trap coil adjustments
(8) Test tapes
(Sony TY-224)
(A-BEX TCC-153, TCC-130, TCC-262B/162B)
(DENON HD-X/60)
(9) Mirror cassette for the transport (A-BEX TCC-902)

Adjustment precaution

(1) Before adjustments, use gauze or a swab moistened with alcohol to wipe the surface of the heads, the capstan shaft, and the pinch roller.

(2) Demagnetize the record/playback head and the erase head with a head eraser.

(3) Completely demagnetize the driver to be used for the adjustments.

(4) Unless otherwise specified, set the various operation controls as indicated below.
Input/output controls: Center
Dolby NR switch: Off

1. Tape transport check

Load the mirror cassette for the transport, and illuminate the area around the fixed guide of the record/playback head with a lamp and observe.

Check that the tape edge is not hitting the tape guide portion.

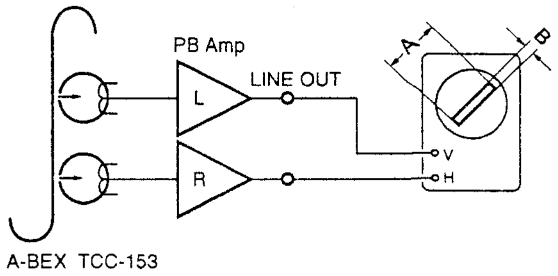
Note that the tape transport is the greatest factor affecting the performance of the cassette deck. Never move the inspection locations without good reason.

For information about replacement and adjustment of the record/playback head, see the section "Adjustment and checking of the mechanism".

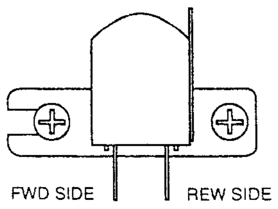
2. Azimuth adjustment

2-1 After making the tape transport check, load the test tape (A-BEX TCC-153).

2-2 Play back the test tape and turn the azimuth adjustment nut so that the Lissajous's figure becomes maximum at (A) and minimum at (B).



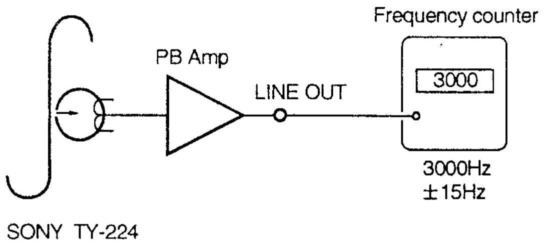
REC/PB HEAD



3. Tape speed check and adjustment

3-1 Connect the frequency counter to the LINE OUT pin and load the test tape (Sony TY-224).

3-2 Playback a test tape. At about halfway through the tape, where the tape transport is stable, confirm that the frequency counter will have a reading within the range of 3,000 Hz ±15 Hz.


Frequency counter
PB Amp
LINE OUT
3000
3000Hz
±15Hz
SONY TY-224

4. Adjustment of the playback system

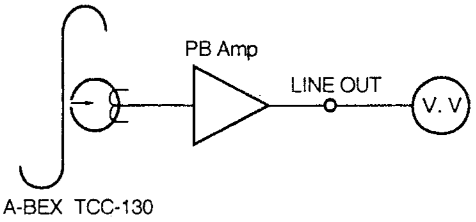
4-1 Playback level

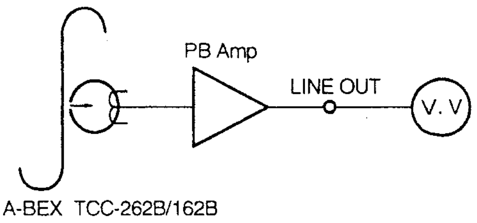
Play back the test tape for the Dolby standard level (A-BEX TCC-130), and adjust VR1 (Left channel) and VR2 (right channel) so that the level of the LINE OUT pin becomes -5.7 dBm (400 mV). (Load resistance of 47 kohm)

4-2 Checking the playback frequency respones

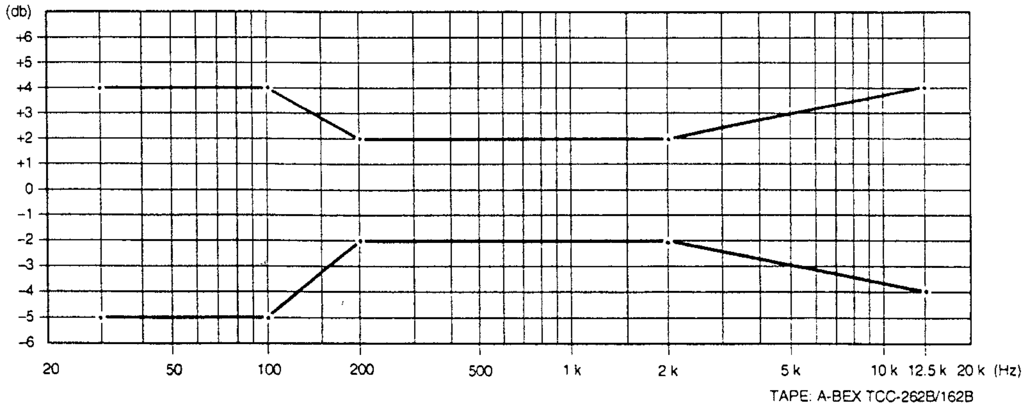
Play back the test tape (A-BEX TCC-262B/162B), and check that the frequency response satisfies the standard.

NOTE After making the azimuth adjustment with the 8 kHz at the start of the A-BEX TCC-262B test tape, perform check of the frequency respones.
Also, after the check make an azimuth adjustment again with A-BEX TCC-153, then apply screw lock.


PB Amp
LINE OUT
V. V
A-BEX TCC-130


PB Amp
LINE OUT
V. V
A-BEX TCC-262B/162B

Playback Frequency Response



CASSETTE DECK SECTION

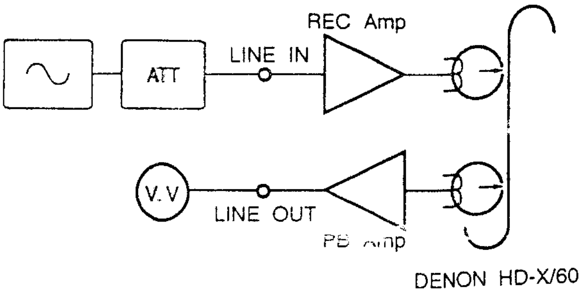
5. Adjustment of the recording system

5-1 Adjustment of the recording and playback overall frequency respons

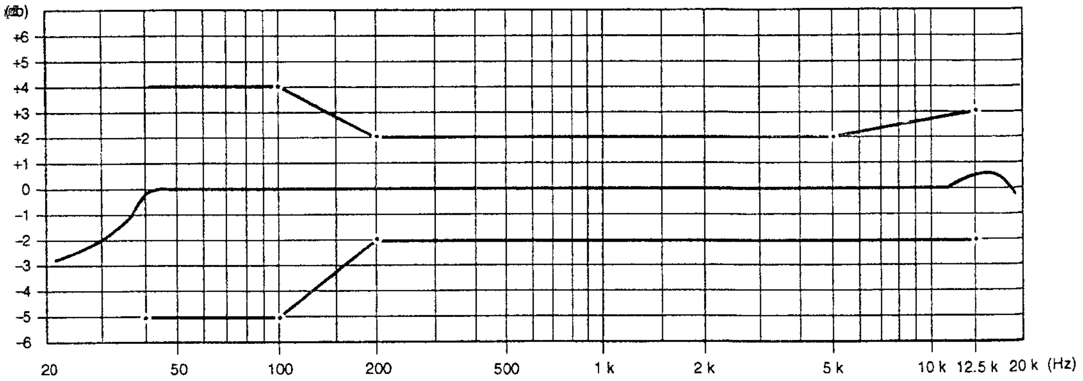
(1) Load the DENON HD-X/60 test tape, record a signal of-20 dBm (30mV) 1 kHz input level, and play back.

(2) Set the input signal to **10 kHz**, record, and play back.

Adjust VR5 (left channel) and VR6 (right channel) so that the response specifications of the diagram below are satisfied with respect to the 1 kHz output level.



Recording/Playback Overall Frequency Response



Tape : HD-X/60
Dollby NR : Off
Level : -20 dB From Dolby Level

5-2 Adjustment of the recording/playback level

(1) Load the DENON HD-X/60 test tape, record a signal of 1 kHz (-20 dBm), and play back.

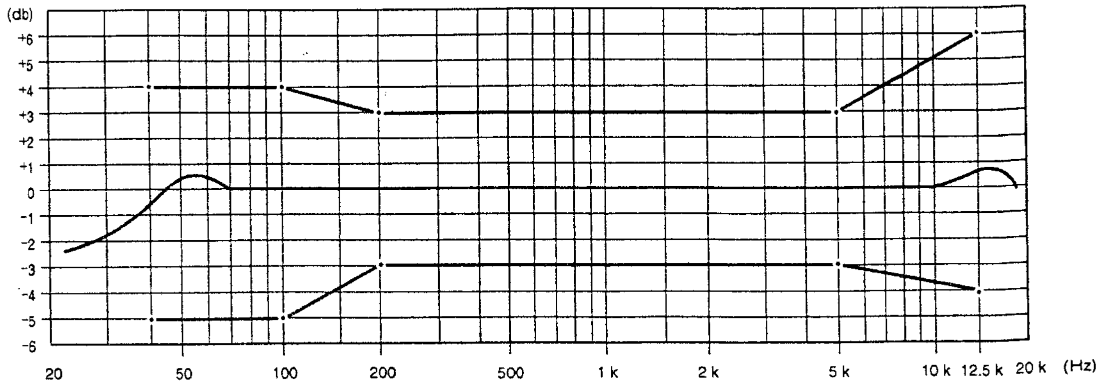
(2) Adjust VR3 (left channel) and VR4 (right channel) so that the output of the LINE OUT pin becomes the same as the output at the time of the recording monitor.

5-3 Checking the Dolby C recording and playback overall frequency response.

(1) Set the Dolby NR switch to the "C" positions.

(2) Use the DENON HD-X/60 test tape to record and play back according to the outline of Section 5-1, then check that the response specifications have been satisfied.

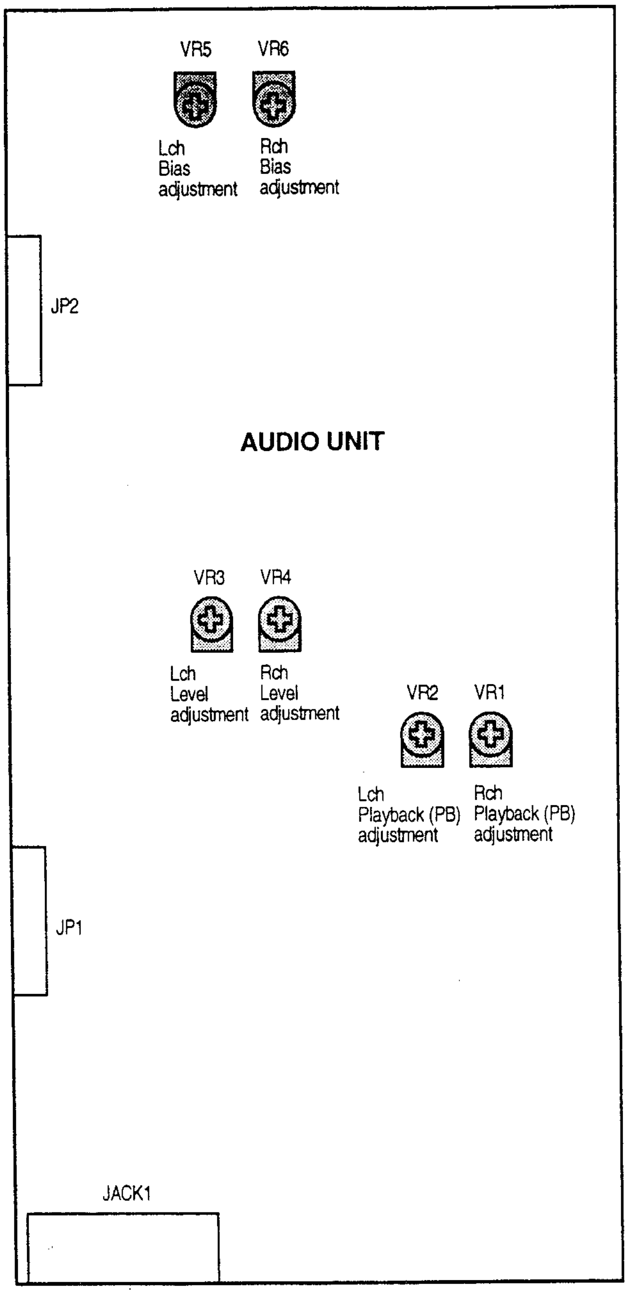
Recording/Playback level Overall Frequency



Tape :
Dollby NR : On C
Level : -20 dB From Dolbv

Outline Diagram of Adjustment Locations

Audio Unit Ass'y (Component side)

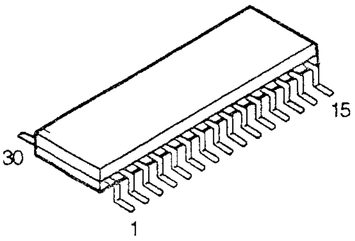

VR5
VR6
Lch Bias adjustment
Rch Bias adjustment
JP2
AUDIO UNIT
VR3
VR4
Lch Level adjustment
Rch Level adjustment
VR2
VR1
Lch Playback (PB) adjustment
Rch Playback (PB) adjustment
JP1
JACK1

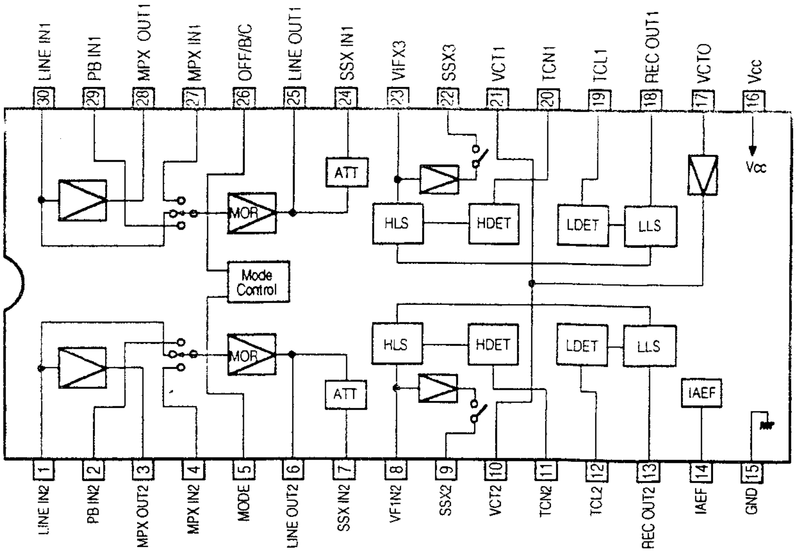
CASSETTE DECK SECTION

SEMICONDUCTORS

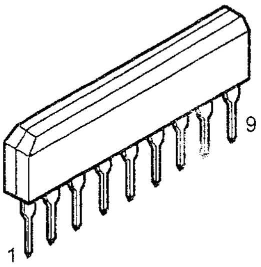
IC's

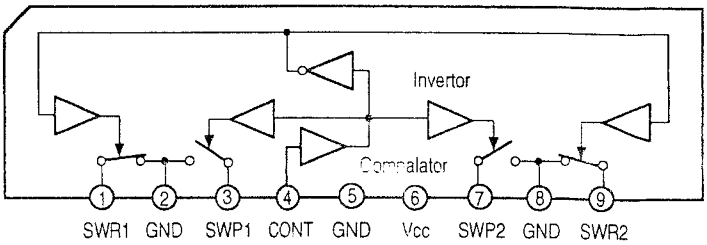
CXA1331M (IC004)



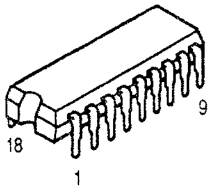

30 LINE IN1
29 PB IN1
28 MPX OUT1
27 MPX IN1
26 OFF/B/C
25 LINE OUT1
24 SSX IN1
23 VIFX3
22 SSX3
21 VCT1
20 TCN1
19 TCL1
18 REC OUT1
17 VCTO
16 Vcc
Vcc
ATT
HLS
HDET
LDET
LLS
MOR
Mode Control
MOR
HLS
HDET
LDET
LLS
ATT
IAEF
1 LINE IN2
2 PB IN2
3 MPX OUT2
4 MPX IN2
5 MODE
6 LINE OUT2
7 SSX IN2
8 VF IN2
9 SSX2
10 VCT2
11 TCN2
12 TCL2
13 REC OUT2
14 IAEF
15 GND

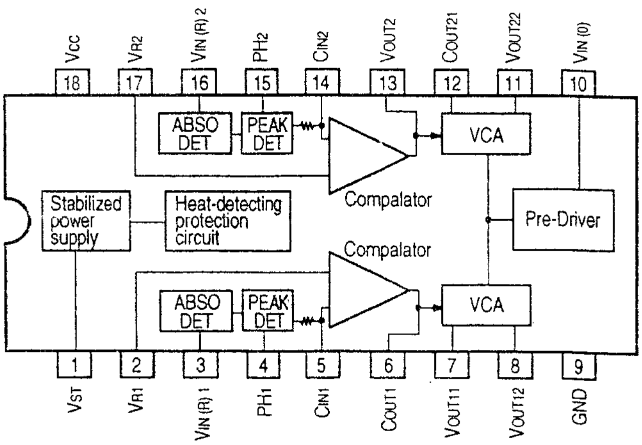
µPC1330HA (IC001)



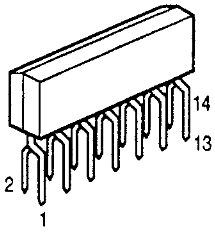

Invertor
Compalator
1 SWR1
2 GND
3 SWP1
4 CONT
5 GND
6 Vcc
7 SWP2
8 GND
9 SWR2

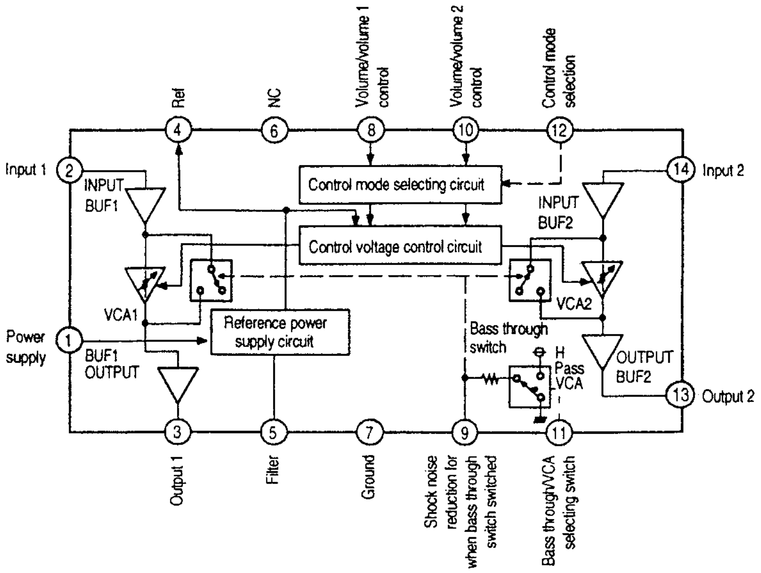
µPC1297CA (IC005)
Dolby HX Pro.



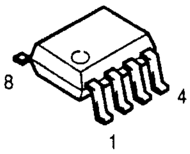

18 Vcc
17 VR2
16 VIN (R) 2
15 PH2
14 CIN2
13 VOUT2
12 COUT21
11 VOUT22
10 VIN (0)
ABSO DET
PEAK DET
VCA
Compalator
Stabilized power supply
Heat-detecting protection circuit
Pre-Driver
Compalator
ABSO DET
PEAK DET
VCA
1 VST
2 VR1
3 VIN (R) 1
4 PH1
5 CIN1
6 COUT1
7 VOUT11
8 VOUT12
9 GND

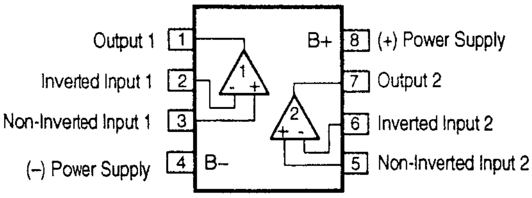
M51132L (IC006)



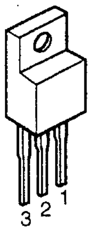

Ref
NC
Volume/volume 1 control
Volume/volume 2 control
Control mode selection
4
6
8
10
12
Input 1
2
INPUT BUF1
Control mode selecting circuit
14
Input 2
INPUT BUF2
Control voltage control circuit
VCA1
VCA2
Reference power supply circuit
Bass through switch
Power supply
1
BUF1 OUTPUT
H
Pass VCA
OUTPUT BUF2
13
Output 2
3
5
7
9
11
Output 1
Filter
Ground
Shock noise reduction for when bass through switch switched
Bass through/VCA selecting switch

NJM4565DD (IC106)
NJM4565MD (IC002,003)



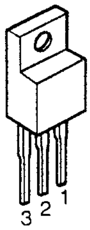

Output 1
1
Inverted Input 1
2
Non-Inverted Input 1
3
(–) Power Supply
4
B+
8
(+) Power Supply
7
Output 2
6
Inverted Input 2
5
Non-Inverted Input 2
B–
1
2

NJM7908FA (IC102)
(Three-terminal negative constant voltage power supply)



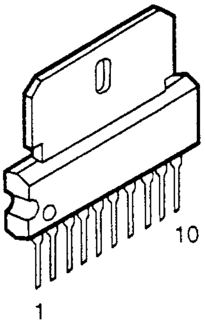
1: Output
2: Input
3: GND

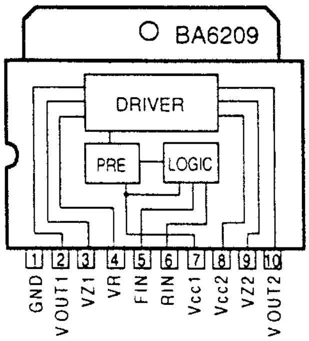
KIA7806P (IC103)
NJM7808FA (IC101)
(Three-terminal positive constant voltage power supply)



1: Output
2: GND
3: Input

BA6209N (IC104)
Reversible motor driver (2 circuit built in)

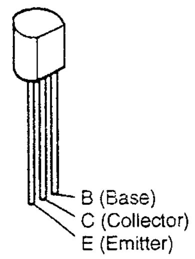



BA6209
DRIVER
PRE
LOGIC
1 GND
2 VOUT1
3 VZ1
4 VR
5 FIN
6 RIN
7 Vcc1
8 Vcc2
9 VZ2
10 VOUT2

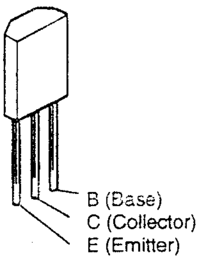
CASSETTE DECK SECTION

TRANSISTORS

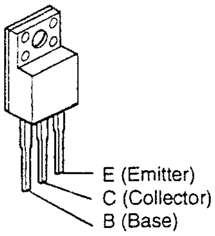
KTD1302


B (Base)
C (Collector)
E (Emitter)

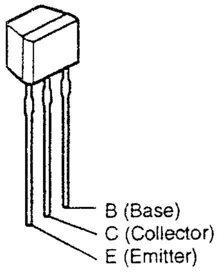
KTA1273 (Y)


B (Base)
C (Collector)
E (Emitter)

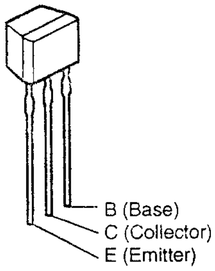
KTD2058 (Y)


E (Emitter)
C (Collector)
B (Base)

2SA933S (S)
2SC1740S (R)


B (Base)
C (Collector)
E (Emitter)

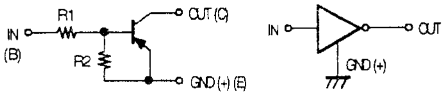
DTA144ES
DTC114ES
DTC114TS
DTC124ES
DTC144ES


B (Base)
C (Collector)
E (Emitter)

DTA144EK
DTA144ES } PNP type

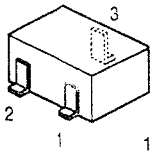
DTC114ES
DTC114TK
DTC114TS
DTC124ES
DTC144EK
DTC144ES
DTC343TK } NPN type

DTA EK/ES series


R1
IN
(B)
R2
OUT (C)
GND (+) (E)
IN
OUT
GND (+)

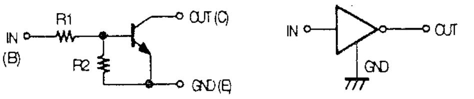
	R1	R2
DTA144ES	47 kohm	47 kohm
DTA144EK	47 kohm	47 kohm

DTA144EK
DTC114TK
DTC144EK
DTC343TK



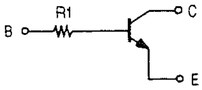
1: GND/Emitter
2: In/Base
3: Out/Collector

DTC EK/ES series


R1
IN
(B)
R2
OUT (C)
GND (E)
IN
OUT
GND

	R1	R2
DTC114ES	10 kohm	10 kohm
DTC124ES	22 kohm	22 kohm
DTC144EK	47 kohm	47 kohm
DTC144ES	47 kohm	47 kohm

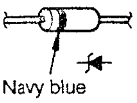
DTC TK/TS series



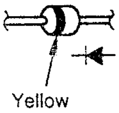
	R1
DTC114TS	10 kohm
DTC114TK	10 kohm
DTC343TK	4.7 kohm

DIODES

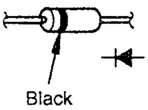
MTZJ3.9B MTZJ9.1B
MTZJ5.6B MTZJ12B
MTZJ6.2B MTZJ20B
MTZJ7.5B



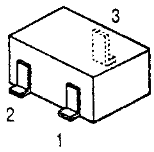
1SS131



1N4002A

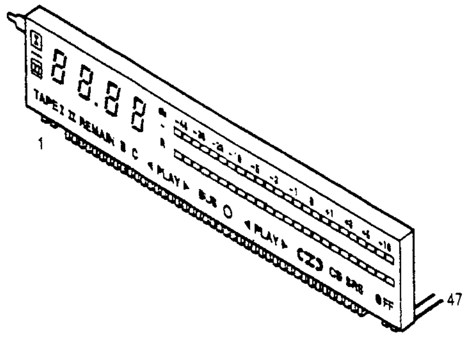


KDS226S



1: Cathode1
2: Anode2
3: Anode1/Cathode2

Fluorescent Display Tube BJ239GK (FLT301)
(Part No. : 393 8014 000)


1
47
TAPE I II REMAIN B C
◀PLAY▶ DUB ○ ◀PLAY▶
CD SRS
OFF

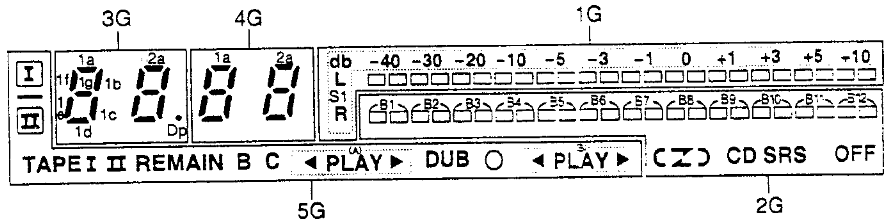
Pin Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Connection	F1	F1	NP	NP	1G	2G	3G	4G	5G	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Pin No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Connection	NC	NC	P17	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F2	F2

NOTE 1) FI and F2 : ············· Filaments
2) NP : ····················· No pin
3) NC : ····················· No connection
4) 1G through 5G : ·········· Grid

Grid Assignment

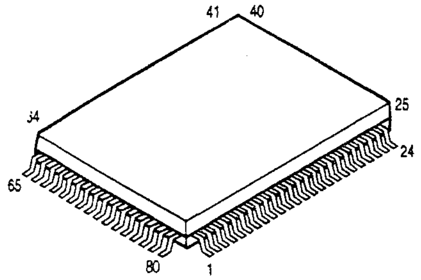

3G
4G
1G
I
II
1a
2a
1f
1g
1b
1e
1c
1d
Dp
db -40 -30 -20 -10 -5 -3 -1 0 +1 +3 +5 +10
L
S1
R
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
TAPE I II REMAIN B C ◀ PLAY ▶ DUB ○ ◀ PLAY ▶
(Z) CD SRS OFF
5G
2G

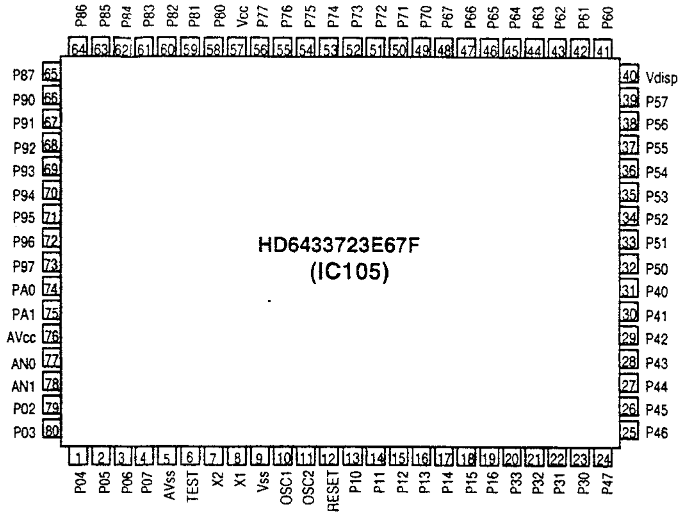
Anode Connection

	5G	4G	3G	2G	1G
P1	TAPE	1a	1a	B1	B1
P2	I	1b	1b	B2	B2
P3	II	1c	1c	B3	B3
P4	REMAIN	1d	1d	B4	B4
P5	B	1e	1e	B5	B5
P6	C	1f	1f	B6	B6
P7	◀	1g	1g	B7	B7
P8	PLAY	2a	2a	B8	B8
P9	▶	1b	1b	B9	B9
P10	DUB	2c	2c	B10	B10
P11	○	2d	2d	B11	B11
P12	◀	2e	2e	B12	B12
P13	PLAY	2f	2f	(	S1
P14	▶	2g	2g	Z	–
P15	$\boxed{\text{I}}$	–	Dp	)	–
P16	—	–	–	CD SRS	–
P17	$\boxed{\text{II}}$	–	–	OFF	–

MICROPROCESSOR DOCUMENTASION

HD6433723E67F
(IC105)

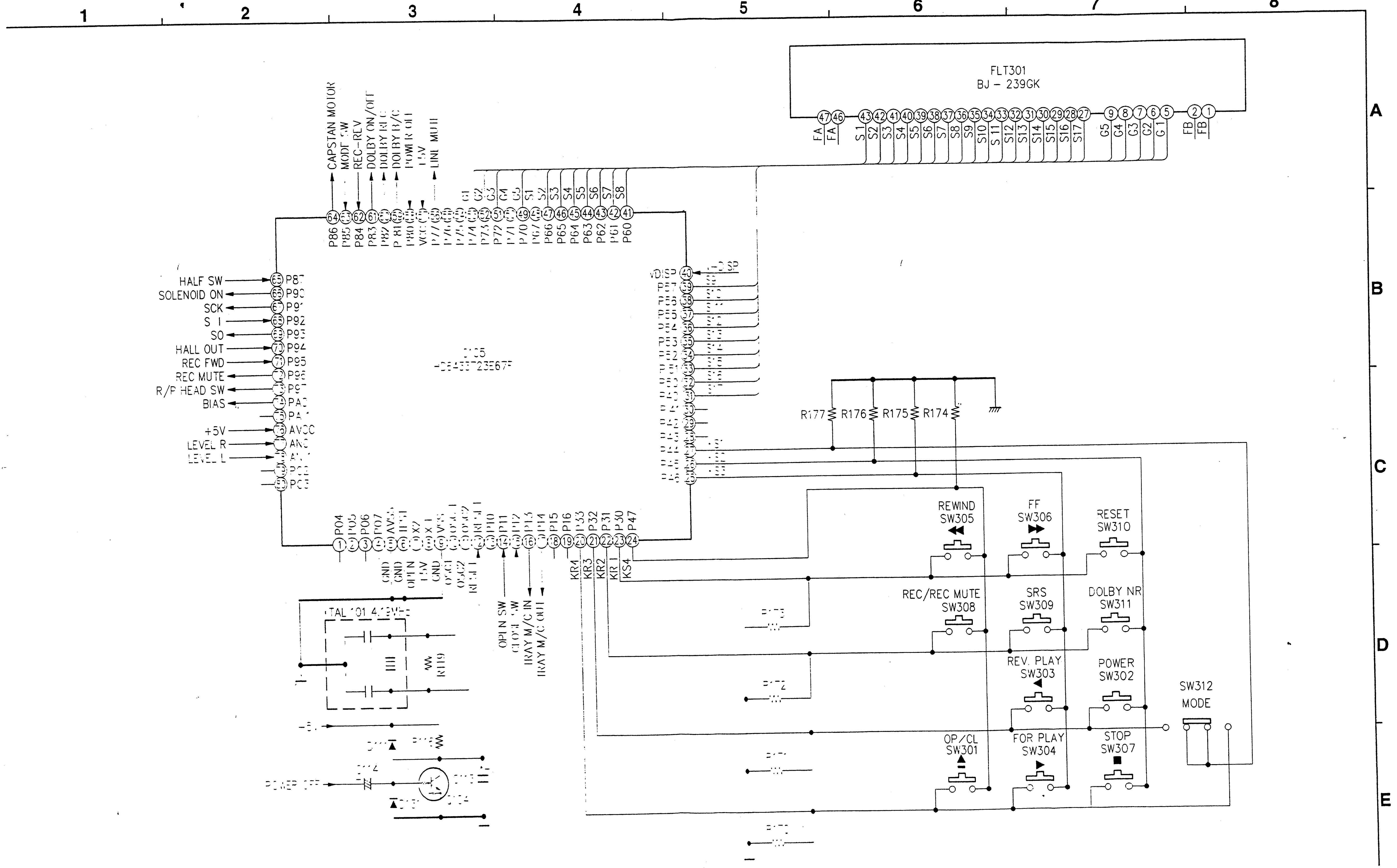

41
40
34
25
24
65
80
1


HD6433723E67F
(IC105)
64 P86
63 P85
62 P84
61 P83
60 P82
59 P81
58 P80
57 Vcc
56 P77
55 P76
54 P75
53 P74
52 P73
51 P72
50 P71
49 P70
48 P67
47 P66
46 P65
45 P64
44 P63
43 P62
42 P61
41 P60
65 P87
66 P90
67 P91
68 P92
69 P93
70 P94
71 P95
72 P96
73 P97
74 PA0
75 PA1
76 AVcc
77 AN0
78 AN1
79 P02
80 P03
40 Vdisp
39 P57
38 P56
37 P55
36 P54
35 P53
34 P52
33 P51
32 P50
31 P40
30 P41
29 P42
28 P43
27 P44
26 P45
25 P46
1 P04
2 P05
3 P06
4 P07
5 AVss
6 TEST
7 X2
8 X1
9 Vss
10 OSC1
11 OSC2
12 RESET
13 P10
14 P11
15 P12
16 P13
17 P14
18 P15
19 P16
20 P33
21 P32
22 P31
23 P30
24 P47

HD6433723E67F Terminal Function

Pin No.	Terminal Name	I/O	PULL U/D	ACT	Port Name	Function
1	P04	I	—	—		Not used.
2	P05	I	—	—		Not used.
3	P06	I	—	—		Not used.
4	P07	I	—	—		Not used.
5	AVSS	I	—	—	AVSS	A/D GND.
6	TEST	I	—	—	TEST	GND.
7	X2	O	—	—	X2	Not used.
8	X1	I	—	—	X1	+5V.
9	VSS	I	—	—	VSS	GND.
10	OSC1	I	—	—	OSC1	System oscillation input terminal (4.19 MHz).
11	OSC2	O	—	—	OSC2	System oscillation output terminal (4.19MHz).
12	RESET	I	—	L	RESET	System reset input signal ("L" to reset).
13	P10	—	—	—		Not used.
14	P11	I	—	H	OPEN SW	Becomes "H" at switch open.
15	P12	I	—	H	CLOSE SW	Becomes "H" at switch close.
16	P13	O	—	H	TARY M/C IN	Becomes "H" at tray loading in.
17	P14	O	—	H	TRAY M/C OUT	Becomes "H" at tray loading out.
18	P15	—	—	—		Not used.
19	P16	—	—	—		Not used.
20	P33	I	P/D GND	H	KR4	Key reading signal 4.
21	P32	I	P/D GND	H	KR3	Key reading signal 3.
22	P31	I	P/D GND	H	KR2	Key reading signal 2.
23	P30	I	P/D GND	H	KR1	Key reading signal 1.
24	P47	O	P/D GND	H	KS4	Key scan signal 4.
25	P46	O	P/D GND	H	KS3	Key scan signal 3.
26	P45	O	P/D GND	H	KS2	Key scan signal 2.
27	P44	O	P/D GND	H	KS1	Key scan signal 1.
28	P43	O	—	H		Not used.
29	P42	O	—	H		Not used.
30	P41	O	—	H		Not used.
31	P40	O	P/D Vdisp	H	S17	FLT indication segment terminal (17).
32	P50	O	P/D Vdisp	H	S16	FLT indication segment terminal (16).
33	P51	O	P/D Vdisp	H	S15	FLT indication segment terminal (15).
34	P52	O	P/D Vdisp	H	S14	FLT indication segment terminal (14).
35	P53	O	P/D Vdisp	H	S13	FLT indication segment terminal (13).
36	P54	O	P/D Vdisp	H	S12	FLT indication segment terminal (12).
37	P55	O	P/D Vdisp	H	S11	FLT indication segment terminal (11).
38	P56	O	P/D Vdisp	H	S10	FLT indication segment terminal (10).
39	P57	O	P/D Vdisp	H	S9	FLT indication segment terminal (9).
40	Vdisp	I	—	—	Vdisp	Power supply for FLT.
41	P60	O	P/D Vdisp	H	S8	FLT indication segment terminal (8).
42	P61	O	P/D Vdisp	H	S7	FLT indication segment terminal (7).
43	P62	O	P/D Vdisp	H	S6	FLT indication segment terminal (6).
44	P63	O	P/D Vdisp	H	S5	FLT indication segment terminal (5).
45	P64	O	P/D Vdisp	H	S4	FLT indication segment terminal (4).
46	P65	O	P/D Vdisp	H	S3	FLT indication segment terminal (3).
47	P66	O	P/D Vdisp	H	S2	FLT indication segment terminal (2).
48	P67	O	P/D Vdisp	H	S1	FLT indication segment terminal (1).
49	P70	O	P/D Vdisp	H	G5	FLT indication grid terminal (5).
50	P71	O	P/D Vdisp	H	G4	FLT indication grid terminal (4).
51	P72	O	P/D Vdisp	H	G3	FLT indication grid terminal (3).
52	P73	O	P/D Vdisp	H	G2	FLT indication grid terminal (2).
53	P74	O	P/D Vdisp	H	G1	FLT indication grid terminal (1).
54	P75	—	—	—		Not used.
55	P76	—	—	—		Not used.
56	P77	O	P/D GND	L	LINE MUTE	"L" to line mute ON, "H" to signal.
57	VCC	I	—	—	VCC	System power supply +5V.
58	P80	I	—	L	POWER OFF	Power OFF detection signal ("L" at OFF).
59	P81	O	—	H/L	DOLBY B/C	Dolby "B" at "H", Dolby "C" at "L".
60	P82	O	—	L/H	DOLBY REC	Dolby recording at "L", Dolby playback at "H".
61	P83	O	—	L/H	DOLBY ON/OFF	Dolby ON at "L", Dolby OFF at "H".
62	P84	I	—	L	INH-R	REV recording inhibit at "L", REV recording at "H".
63	P85	I	—	H	MODE SW	Head up at "H", head down at "L".
64	P86	O	—	H	CPM	Capstan motor ON at "H".
65	P87	I	—	H	HALF SW	Tape detection exists at "H", tape detection not exists at "L".
66	P90	O	—	H	SOL	Solenoid ON at "H".
67	P91	O	—	L	SCK	Serial communication clock signal (cycle: 62.5 ms)
68	P92	I	—	L	SI	Serial data input signal.
69	P93	O	—	L	SO	Serial data output signal.
70	P94	I	—	H/L	HALL OUT	Reel sensor detection input signal.
71	P95	I	—	L	INH-F	FWD recording inhibit at "L", FWD recording at "H".
72	P96	O	—	H	REC-MUTE	Recording mute at "H", recording at "L".
73	P97	O	—	H/L	R/P HEAD SW	REC/PAUSE/MUTE at "H", others at "L".
74	PA0	O	—	H	BIAS	ON recording at "L", others at "H".
75	PA1	—	—	—		Not used.
76	AVCC	I	—	—	AVCC	+5V.
77	AN0	I	—	—	LEVEL "R"	R-ch level input signal.
78	AN1	I	—	—	LEVEL "L"	L-ch level input signal.
79	P02	I	—	—		Not used.
80	P03	I	—	—		Not used

MICROPROCESSOR PERIPHERAL WIRING DIAGRAM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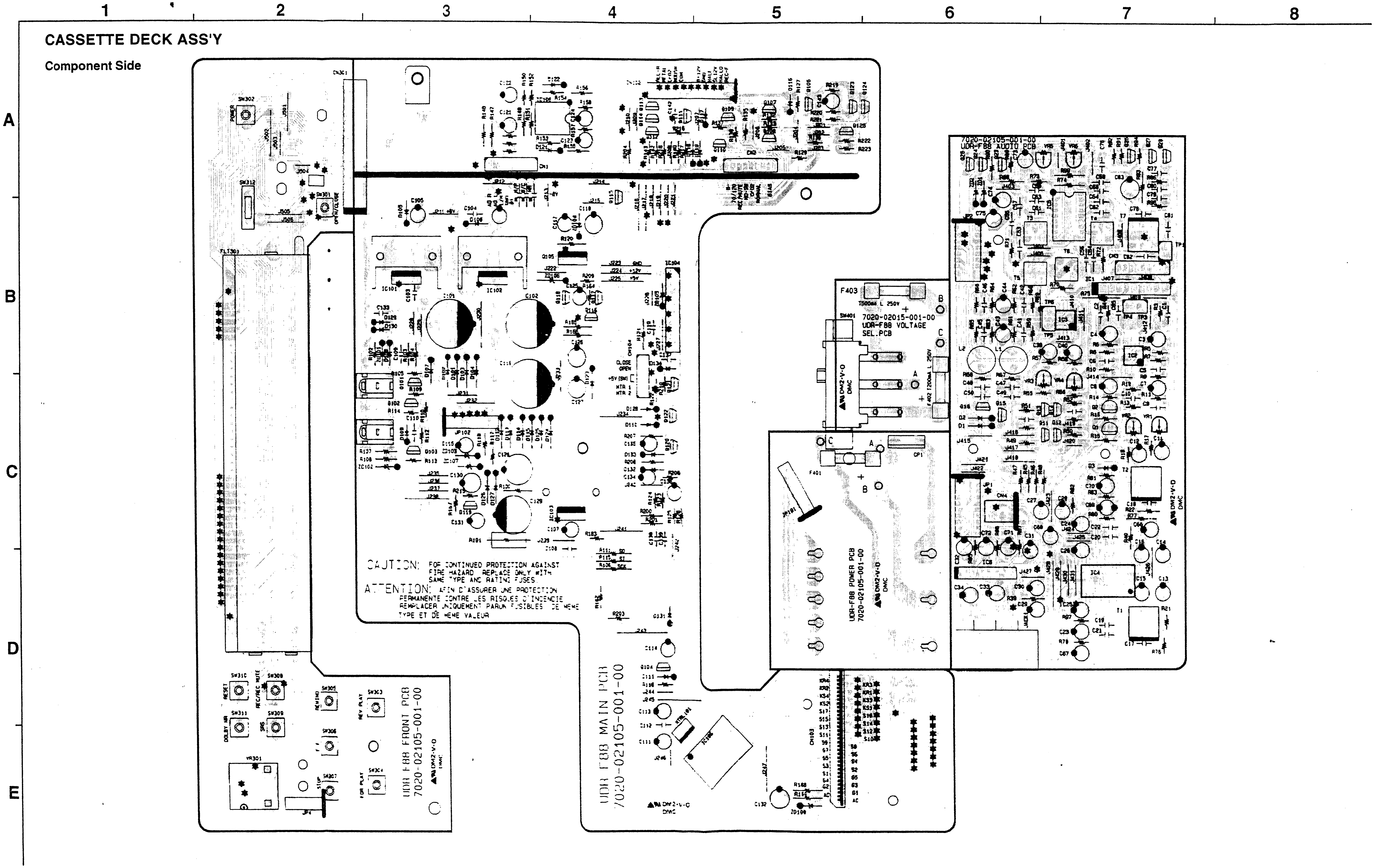
C
D
E
FLT301
BJ - 239GK
FA
FA
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
G5
G4
G3
G2
G1
FB
FB
CAPSTAN MOTOR
MODE SW
REC-REV
DOLBY ON/OFF
DOLBY REC
DOLBY B/C
POWER OFF
+5V
LINE MUTE
G1
G2
G3
G4
G5
S1
S2
S3
S4
S5
S6
S7
S8
P86
P85
P84
P83
P82
P81
P80
VCC
P77
P76
P75
P74
P73
P72
P71
P70
P67
P66
P65
P64
P63
P62
P61
P60
HALF SW
SOLENOID ON
SCK
SI
SO
HALL OUT
REC FWD
REC MUTE
R/P HEAD SW
BIAS
+5V
LEVEL R
LEVEL L
P87
P90
P91
P92
P93
P94
P95
P96
P97
PA0
PA1
AVCC
AN0
AN1
PC0
PC1
IC05
VDISP
VDISP
P57
P56
P55
P54
P53
P52
P51
P50
P40
P41
P42
P43
P44
P45
P46
R177
R176
R175
R174
P04
P05
P06
P07
AVSS
TEST
X2
X1
VSS
OSC1
OSC2
RESET
P10
P11
P12
P13
P14
P15
P16
P33
P32
P31
P30
P47
GND
GND
OPEN
+5V
GND
OSC1
OSC2
RESET
OPEN SW
CLOSE SW
TRAY M/C IN
TRAY M/C OUT
KR4
KR3
KR2
KR1
KS4
XTAL 101 4.19MHz
R119
-5V
POWER OFF
REWIND
SW305
FF
SW306
RESET
SW310
REC/REC MUTE
SW308
SRS
SW309
DOLBY NR
SW311
REV. PLAY
SW303
POWER
SW302
SW312
MODE
OP/CL
SW301
FOR PLAY
SW304
STOP
SW307

PRINTED WIRING BOARD

CASSETTE DECK ASS'Y

Component Side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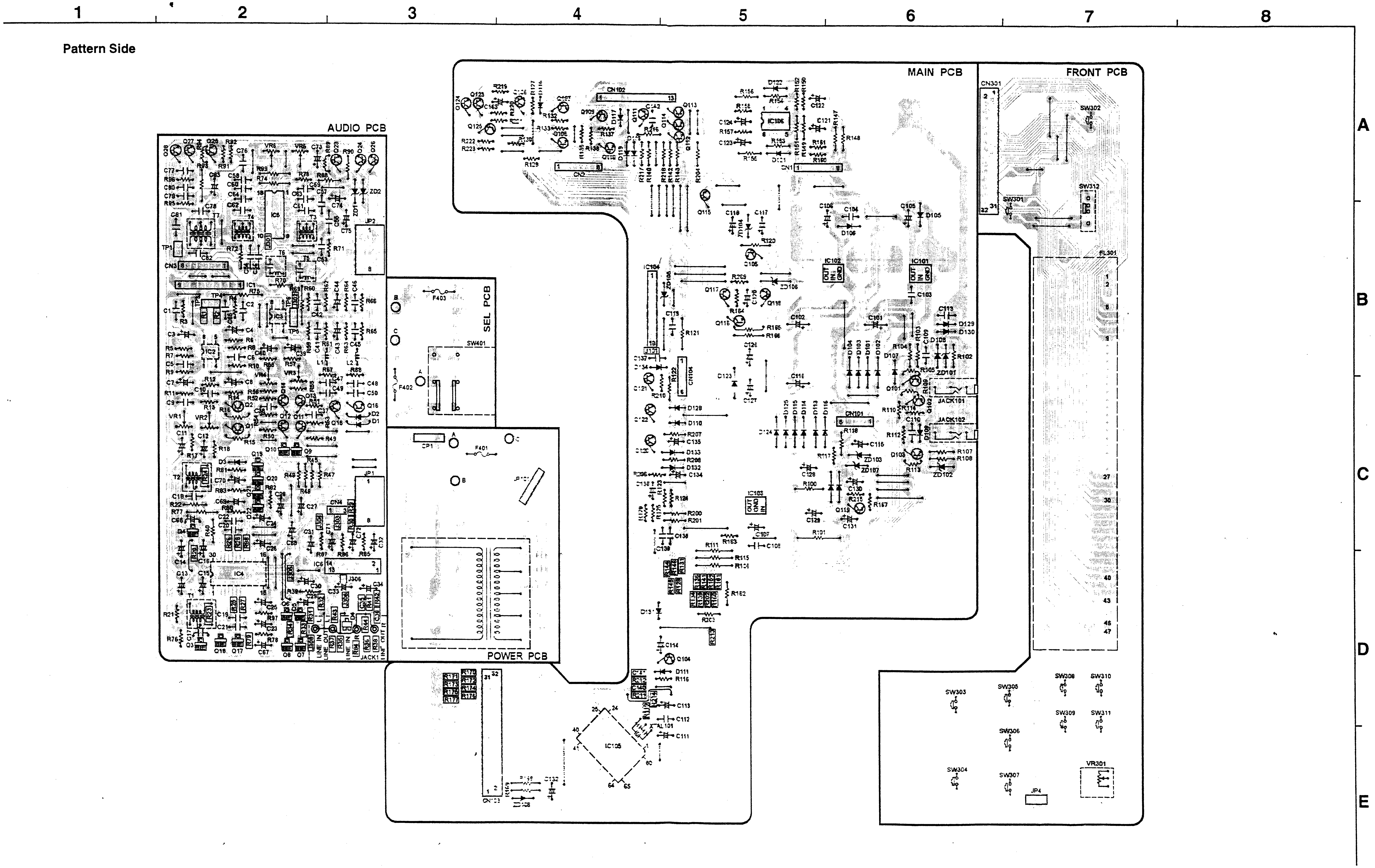
C
D
E
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD REPLACE ONLY WITH SAME TYPE AND RATING FUSES.
ATTENTION: AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE REMPLACER UNIQUEMENT PAR UN FUSIBLES DE MEME TYPE ET DE MEME VALEUR
UDR F88 MAIN PCB
7020-02105-001-00
UDR F88 FRONT PCB
7020-02105-001-00
7020-02105-001-00
UDR-F88 AUDIO PCB
7020-02015-001-00
UDR-F88 VOLTAGE SEL.PCB
UDR-F88 POWER PCB
7020-02105-001-00
F403
T500mA L 250V
F402 T200mA L 250V
F401
SW401
SW302
SW312
SW301
SW310
SW308
SW311
SW309
SW305
SW306
SW303
SW304
SW307
VR301
FLT301
CN301
CN103
IC101
IC102
IC103
IC104
IC105
IC106
POWER
RESET
REC/REC MUTE
DOLBY NR
SRS
REWIND
REV PLAY
FOR PLAY
STOP
OPEN/CLOSE
CLOSE
OPEN
+5V(SW)
MTR 1
MTR 2
CP1
IC1
IC2
IC3
IC4
IC8
T1
T2
T3
T5
T6
T7
L1
L2
TP1
TP2
TP3
TP4
TP5
TP6
VR1
VR2
VR3
VR4
VR5
VR6

Pattern Side


1
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A
B
C
D
E
AUDIO PCB
MAIN PCB
FRONT PCB
SEL PCB
POWER PCB

CASSETTE DECK SECTION

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time for supplying. or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.:	RN	14K	2E	182	G	FR
	Type	Shape and performance	Power	Resistance	Allowable error	Others

RD : Carbon	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metal oxide film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
	3H : 5W		

*** Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
2 — Indicates number of zeros after effective number.
1 8 — 2-digit effective number.

- Units: ohm

1 R 2 ⇒ 1.2 ohm
2 — 1-digit effective number.
1 R — 2-digit effective number, decimal point indicated by R.

- Units: ohm

● Capacitors

Ex.:	CE	04W	1H	2R2	M	BP
	Type	Shape and performance	Dielectric strength	Capacity	Allowable error	Others

CE : Aluminum foil electrolytic	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolytic	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolytic	1C : 16V	J : ±5%	HR : Ripple-resistant type
CQ : Film	1E : 25V	K : ±10%	DL : For change and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80% −20%	U : UL part
CP : Oil	2A : 100V		C : CSA part
CM : Mica	2B : 125V	P : +100% −0%	W : UL-CSA type
CF : Metallized	2C : 160V		F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

*** Capacity (electrolyte only)**

2 2 2 ⇒ 2200μF
2 — Indicates number of zeros after effective number
2 2 — 2-digit effective number

- Units: μF

2 R 2 ⇒ 2.2μF
2 — 1-digit effective number
2 R — 2-digit effective number, decimal point indicated by R

- Units: μF

*** Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF=0.0022μF
2 — (More than 2) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number

- Units: μF.

2 2 1 ⇒ 220pF
1 — (0 or 1) — Indicates number of zeros after effective number.
2 2 — 2-digit effective number

- Units: pF.

- When the dielectric strength is indicated in AC "AC" is included after the dieelectric strength value

PARTS LIST OF P.W.B. UNIT ASS'Y

CASSETTE DECK UNIT ASS'Y

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS			
IC001	263 0590 001	IC μPC1330HA	Logic IC
IC002,003	928 0035 809	IC NJM4565MD	Linear ope.amp
IC004	262 1267 903	IC CXA1331M	Dolby IC
IC005	263 0354 001	IC μPC1297CA	Dolby HX pro.
IC006	960 0014 109	IC M51132L	Linear equalizer
⚠ IC101	263 0502 002	IC NJM7808FA	Regulator +8V
⚠ IC102	263 0503 001	IC NJM7908FA	Regulator -8V
⚠ IC103	9LC P024 12	IC KIA7806P	Regulator +6V
IC104	9L2 3017 01W	IC BA6209N	Linear driver/olume
IC105	960 0085 303	IC HD6433723E67F	CPU microprocessor
IC106	960 0013 100	IC NJM4565DD	Linear ope.amp
Q001,002	274 0096 013	Transistor KTD1302	
Q003,004	269 0088 906	Transistor DTC114TK	Built in resistor
Q005~010	269 0104 903	Transistor DTC343TK	Built in resistor
Q011~016	269 0074 907	Transistor DTC114TS	Built in resistor
Q017	269 0055 900	Transistor DTA144EK	Built in resistor
Q018,019	269 0054 901	Transistor DTC144EK	Built in resistor
Q123	269 0020 906	Transistor DTC114ES	Build in resistor
Q124	273 0178 022	Transistor 2SC1740(R)	
Q125	960 0010 501	Transistor KTA1273(Y)	
Q020,021	269 0055 900	Transistor DTA144EK	Built in resistor
Q022	269 0054 901	Transistor DTC144EK	Built in resistor
Q023,024	269 0020 906	Transistor DTC114ES	Built in resistor
Q025	960 0010 501	Transistor KTA1273(Y)	
Q026	269 0040 009	Transistor DTC144ES	Built in resistor
Q027,028	273 0178 022	Transistor 2SC1740S(R)	
Q101,102	271 0192 002	Transistor 2SA933S(S)	
Q103	273 0178 022	Transistor 2SC1740S(R)	
Q104	269 0040 009	Transistor DTC144ES	Built in resistor
Q105	960 0004 902	Transistor KTD2058(Y)	
Q106	269 0040 009	Transistor DTC144ES	Built in resistor
Q107	960 0010 501	Transistor KTA1273(Y)	
Q108	269 0020 906	Transistor DTC114ES	Built in resistor
Q109	960 0010 501	Transistor KTA1273(Y)	
Q110	269 0020 906	Transistor DTC114ES	Built in resistor
Q111	269 0093 904	Transistor DTA144ES	Built in resistor
Q112~114	269 0040 009	Transistor DTC144ES	Built in resistor
Q115	269 0093 904	Transistor DTA144ES	Built in resistor
Q116	269 0040 009	Transistor DTC144ES	Built in resistor
Q117	269 0093 904	Transistor DTA144ES	Built in resistor
Q118	269 0040 009	Transistor DTC144ES	Built in resistor
Q119	960 0010 501	Transistor KTA1273(Y)	
Q120~122	269 0062 906	Transistor DTC124ES	Built in resistor
D001~003	960 0031 409	Diode 1SS131	
⚠ D004	960 0014 206	Diode KDS226S	Bridge
⚠ D101~104	916 0053 008	Diode 1N4002A	Rectifier
D105~113	960 0031 409	Diode 1SS131	
D114,115	916 0053 008	Diode 1N4002A	
D116~119	960 0031 409	Diode 1SS131	
D121~123	960 0031 409	Diode 1SS131	
D124~127	916 0053 008	Diode 1N4002A	
D128~134	960 0031 409	Diode 1SS131	
ZD001,002	960 0014 303	Zener diode MTZJ9.1B	9.1 V
ZD101,102	9H3 0000 408	Zener diode MTZJ6.2B	6.2 V
ZD103	9H3 0000 251	Zener diode MTZJ5.6B	5.6 V
ZD104	9H3 0000 409	Zener diode MTZJ12B	12 V
ZD105	LA8 00-0 007	Zener diode MTZJ7.5B	7.5 V
ZD106	960 0013 401	Zener diode MTZJ3.9B	3.9 V
ZD107	960 0014 905	Zener diode MTZJ20B	20 V
ZD108	9H3 0000 408	Zener diode MTZJ6.2B	6.2 V
RESISTORS			
VR001,002	960 0039 113	Semi fixed resistor 47 kohm	C54447301511 P.B.GAIN
VR003,004	960 0039 100	Semi fixed resistor 22 kohm	C54422301511 LEVEL
VR005,006	960 0039 113	Semi fixed resistor 47 kohm	C54447301511BIAS
VR301	960 0011 704	Variable resistor 100 kohm	C45211140040
J146	247 1018 904	Carbon chip 0 ohm 1/8W	RM73B2B0R0K
R001,002	247 0002 966	Carbon chip 10 ohm 1/10W	RM73B--100J
R003,004	241 2403 950	Carbon film 120 kohm 1/6W	RD14B2E124J(5)
R005,006	241 2396 960	Carbon film 150 ohm 1/6W	RD14B2E151J(5)
R007,008	241 2401 981	Carbon film 24 kohm 1/6W	RD14B2E243J(5)
R009,010	241 2405 026	Carbon film 620 kohm 1/6W	RD14B2E624J(5)
R011,012	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R013,014	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5)
R015,016	241 2400 953	Carbon film 6.8 kohm 1/6W	RD14B2E682J(5)
R017,018	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R019,020	247 0009 956	Carbon chip 7.5 kohm 1/10W	RM73B--752J
R021,022	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R023,024	247 0009 943	Carbon chip 6.8 kohm 1/10W	RM73B--682J
R025,026	960 0039 401	Carbon chip 24 kohm 1/10W	RM73B--243F ±1%
R027,028	247 0006 988	Carbon chip 560 ohm 1/10W	RM73B--561J
R029,030	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R031,032	247 0008 902	Carbon chip 1.8 kohm 1/10W	RM73B--182J
R033,034	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R035,036	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R037,038	247 0008 928	Carbon chip 2.2 kohm 1/10W	RM73B--222J
R039,040	241 2401 981	Carbon film 24 kohm 1/6W	RD14B2E243J(5)
R041,042	247 0011 999	Carbon chip 75 kohm 1/10W	RM73B--753J
R043,044	247 0006 962	Carbon chip 470 ohm 1/10W	RM73B--471J
R045,046	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R047,048	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R049,050	241 2402 977	Carbon film 56 kohm 1/6W	RD14B2E563J(5)

Ref. No.	Part No.	Part Name	Remarks
R051,052	241 2401 059	Carbon film 18 kohm 1/6W	RD14B2E183J(5)
R055,056	241 2399 938	Carbon film 2.2 kohm 1/6W	RD14B2E222J(5)
R057,058	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R059,060	241 2404 917	Carbon film 220 kohm 1/6W	RD14B2E224J(5)
R061,062	241 2402 003	Carbon film 30 kohm 1/6W	RD14B2E303J(5)
R063,064	241 2399 064	Carbon film 3 kohm 1/6W	RD14B2E302J(5)
R065,066	241 2398 939	Carbon film 820 ohm 1/6W	RD14B2E821J(5)
R067,068	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R069,070	241 2400 063	Carbon film 7.5 kohm 1/6W	RD14B2E752J(5)
R071,072	241 2403 073	Carbon film 150 kohm 1/6W	RD14B2E154J(5)
R073,074	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R075	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R076	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R077	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R078	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R079	247 0009 985	Carbon chip 10 kohm 1/10W	RM73B--103J
R080	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R081	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R082	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R083	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R084	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R085	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R086,087	241 2402 935	Carbon film 39 kohm 1/6W	RD14B2E393J(5)
R088	241 2398 997	Carbon film 1.5 kohm 1/6W	RD14B2E152J(5)
R089	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R090	241 2398 971	Carbon film 1.2 kohm 1/6W	RD14B2E122J(5)
R091	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R092	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5)
R093	241 2394 069	Carbon film 22 ohm 1/4W	RD14B2E220J
R094	241 2395 945	Carbon film 47 ohm 1/6W	RD14B2E470J(5)
R095,096	241 2401 936	Carbon film 15 kohm 1/6W	RD14B2E153J(5)
R097	241 2401 994	Carbon film 27 kohm 1/6W	RD14B2E273J(5)
R098	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
⚠R101	244 2022 039	Fusible 22 ohm 1/4W(NB)	RD14B2E220JFR
R102	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R103	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R104	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R105	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R106	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R107	241 2397 901	Carbon film 220 ohm 1/6W	RD14B2E221J(5)
R108	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R109,110	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R111	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R112~114	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R115	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R116	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R117	241 2401 059	Carbon film 18 kohm 1/6W	RD14B2E183J(5)
R118	241 2400 953	Carbon film 6.8 kohm 1/6W	RD14B2E682J(5)
R119	247 0014 967	Carbon chip 1 Mohm 1/10W	RM73B--105J
R120	241 2396 928	Carbon film 100 ohm 1/4W	RD14B2E101J
R121	241 2393 989	Carbon film 10 ohm 1/4W	RD14B2E100J
R122~124	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)

Ref. No.	Part No.	Part Name	Remarks
R125	241 2399 970	Carbon film 3.3 kohm 1/6W	RD14B2E332J(5)
R126	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R127	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R128	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R129	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R130	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R131	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R134	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R135	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R136	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R137,138	241 2397 943	Carbon film 330 ohm 1/6W	RD14B2E331J(5)
R139	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R140	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R141	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R142,143	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R144~146	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R147,148	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R149,150	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R151,152	241 2401 981	Carbon film 24 kohm 1/6W	RD14B2E243J(5)
R153,154	241 2401 978	Carbon film 22 kohm 1/6W	RD14B2E223J(5)
R155,156	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R157,158	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R159~161	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R162	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R163	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R164	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R165	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R166	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R167	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R168,169	241 2396 928	Carbon film 100 ohm 1/4W	RD14B2E101J
R170~177	241 2402 951	Carbon film 47 kohm 1/6W	RD14B2E473J(5)
R200,201	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R202	247 0007 945	Carbon chip 1 kohm 1/10W	RM73B--102J
R203,204	241 2403 934	Carbon film 100 kohm 1/6W	RD14B2E104J(5)
R206	241 2400 911	Carbon film 4.7 kohm 1/6W	RD14B2E472J(5)
R207,208	241 2400 995	Carbon film 10 kohm 1/6W	RD14B2E103J(5)
R209	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R211,212	247 0011 944	Carbon chip 47 kohm 1/10W	RM73B--473J
R213,214	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
R215	241 2396 928	Carbon film 100 ohm 1/6W	RD14B2E101J(5)
R216~218	241 2398 955	Carbon film 1 kohm 1/6W	RD14B2E102J(5)
J101	—	Carbon chip 0 ohm 1/8W	C 20000006130
J301~308	—	Carbon chip 0 ohm 1/8W	C 20000006130

CAPACITORS

Ref. No.	Part No.	Part Name	Remarks
C001,002	253 1055 014	Ceramic cap. 560 pF/50V	CK45B1H561K
C003,004	254 4254 019	Electrolytic 22 µF/16V	CE04W1C220M
C005,006	255 1120 097	Film cap. 5600 pF/50V	CQ93M1H562J
C007,008	254 4260 045	Electrolytic 1 µF/50V	CE04W1H010M

CASSETTE DECK SECTION

Ref. No.	Part No.	Part Name	Remarks
C009,010	255 1121 041	Film cap. 0.015 μF/50V	CQ93M1H153J
C011~016	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C017,018	255 1120 055	Film cap. 2700 pF/50V	CQ93M1H272J
C019~022	255 1120 042	Film cap. 2200 pF/50V	CQ93M1H222J
C023,024	254 4260 032	Electrolytic 0.47 μF/50V	CE04W1HR47M
C025,026	254 4260 029	Electrolytic 0.33 μF/50V	CE04W1HR33M
C027~030	254 4260 058	Electrolytic 2.2 μF/50V	CE04W1H2R2M
C031~034	254 4260 074	Electrolytic 4.7 μF/50V	CE04W1H4R7M
C035,036	257 0016 904	Ceramic chip. 100 pF/50V	CC73CH1H101J(Temp.
C039,040	254 4260 074	Electrolytic 4.7 μF/50V	CE04W1H4R7M
C041,042	255 1122 037	Film cap. 0.082 μF/50V	CQ93M1H823J
C043,044	254 4252 024	Electrolytic 47 μF/10V	CE04W1A470M
C045,046	255 1134 012	Film cap. 5600 pF/50V	CQ92M1H562J
C047,048	255 1135 053	Film cap. 3900 pF/50V	CQ92M1H392J
C049,050	255 1134 009	Film cap. 2200 pF/50V	CQ92M1H222J
C053,054	253 1055 069	Ceramic cap. 100 pF/50V	CK45B1H101K
C055,056	960 9001 401	Film cap. 300 pF/100V	CQ93P2A301J
C057,058	253 1055 027	Ceramic cap. 820 pF/50V	CK45B1H821K
C059,060	255 1121 025	Film cap. 0.01 μF/50V	CQ93M1H103J
C061,062	255 1121 083	Film cap. 0.033 μF/50V	CQ93M1H333J
C063,064	255 1121 067	Film cap. 0.022 μF/50V	CQ93M1H223J
C065	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C066	254 4254 019	Electrolytic 22 μF/16V	CE04W1C220M
C067	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C068,069	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C070	254 4260 058	Electrolytic 2.2 μF/50V	CE04W1H2R2M
C071	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C072	254 4254 019	Electrolytic 22 μF/16V	CE04W1C220M
C073	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C074	254 4254 019	Electrolytic 22 μF/16V	CE04W1C220M
C075	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C076	253 1026 001	Ceramic cap. 0.047 μF/50V	CK45F1H473Z
C077	255 1120 042	Film cap. 2200 pF/50V	CQ93M1H222J
C078	255 1121 041	Film cap. 0.015 μF/50V	CQ93M1H153J
C079,080	255 1120 068	Film cap. 3300 pF/50V	CQ93M1H332J
C081	255 4079 925	Film cap. 8200 pF/100V	CQ93P2A822J
C082	253 4342 012	Ceramic cap. 10 pF/50V	CC45SL1H100J
C083	254 4254 051	Electrolytic 220 μF/16V	CE04W1C221M
C101,102	254 4256 091	Electrolytic 2200 μF/25V	CE04W1E222M
C103,104	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C105~107	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C108	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C109,110	253 1004 007	Ceramic cap. 1000 pF/50V	CK45B1H102K
C111	254 4252 037	Electrolytic 100 μF/10V	CE04W1A101M
C112	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C113	254 4260 058	Electrolytic 2.2 μF/50V	CE04W1H2R2M
C114	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C115	254 4260 061	Electrolytic 3.3 μF/50V	CE04W1H3R3M
C116	254 4256 091	Electrolytic 2200 μF/25V	CE04W1E222M
C117	254 4260 061	Electrolytic 3.3 μF/50V	CE04W1H3R3M
C118	254 4254 048	Electrolytic 100 μF/16V	CE04W1C101M

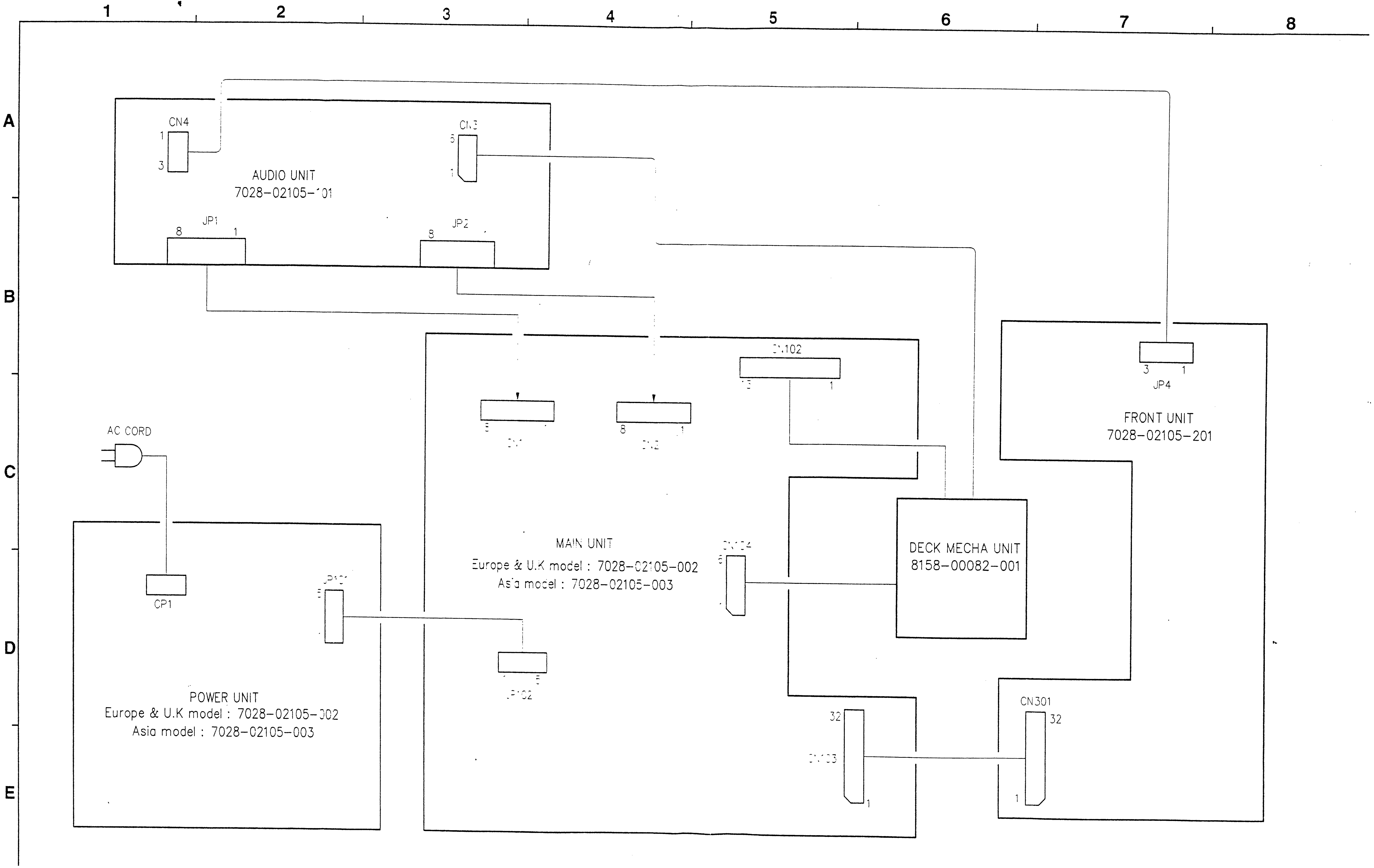
Ref. No.	Part No.	Part Name	Remarks
C119,120	253 1027 000	Ceramic cap. 0.1 μF/50V	CK45F1H104Z
C121,122	254 4260 058	Electrolytic 2.2 μF/50V	CE04W1H2R2M
C123,124	254 4260 032	Electrolytic 0.47 μF/50V	CE04W1HR47M
C125	254 4260 906	Electrolytic 0.1 μF/50V	CE04W1H0R1M
C126,127	254 4256 046	Electrolytic 100 μF/25V	CE04W1E101M
C128	254 4256 062	Electrolytic 330 μF/25V	CE04W1E331M
C129	254 4261 044	Electrolytic 330 μF/50V	CE04W1H331M
C130	254 4258 044	Electrolytic 47 μF/35V	CE04W1V470M
C131	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C132	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C133	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C134	254 4260 045	Electrolytic 1 μF/50V	CE04W1H010M
C135	254 4254 035	Electrolytic 47 μF/16V	CE04W1C470M
C136	254 4256 004	Electrolytic 10 μF/25V	CE04W1E100M
C137	253 1025 002	Ceramic cap. 0.022 μF/50V	CK45F1H223Z
C138,139	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C140,141	257 0009 966	Ceramic chip. 4700 pF/50V	CK73B1H472K
C142	253 1010 004	Ceramic cap. 0.01 μF/50V	CK45B1H103K
C143	254 4252 037	Electrolytic 100μF/10V	CE04W1A101M

OTHER PARTS				Q'ty
	—	(P.W.board)	—	(1)
JACK001	960 0014 002	4 P pin jack	G60204004504	1
JACK101,102	960 0004 407	Mini jack φ3.5	G40103110201	2
L001,002	960 0013 618	Inductor 18 mH	D33018000000	2
SW301~311	960 0002 409	Tact switch	G18000027000	11
SW312	960 0011 801	Slide switch	G06031301201	1
⚠SW401	**960 0037 403**	**Slide switch (Voltage sel.sw)**	**G06000100001** Asia model only	**1**
T001,002	960 0013 906	MPX filter	E40125366001	2
T003,004	960 0013 702	Osc. transformer	D94052400000	2
T005,006	960 0013 605	Trap coil	D30212652240	2
T007	960 0013 809	Osc. bias transformer	E08051690000	1
FLT301	393 8014 000	FLD tube BJ-239GK	K53000028001	1
⚠F401	**960 0038 800**	**Fuse T0.2A 250V**	**G65020125104** **Europe model**	**1**
⚠F402	**960 0038 800**	**Fuse T0.2A 250V**	**G65020125104** **Asia model**	**1**
⚠F403	**960 0038 907**	**Fuse T0.5A 250V**	**G65050125104** **Asia model**	**1**
	960 0005 804	Fuse holder	for F401 Europe model	2
	960 0005 804	Fuse holder	for F402.403 Asia model	4

Ref. No.	Part No.	Part Name	Remarks	Q'ty
XTAL101	399 0107 007	Ceramic resonator	CST4.19MGW	1
CN001,002	—	Connector wafer 8 P	L10120080001	2
CN003	—	Connector wafer 8 P	L10153014081	1
CN004	—	Connector wafer 3 P	L13206031001	1
CN101	—	Cable holder 5 P	L11251052050	1
CN102	—	Wire trap 13 P	L14152147131	1
CN103	960 0039 207	Flat cable 32 P Holder	L13152044320	1
CN103	960 0013 207	Flat cable 32 P Connector	L13152045320	1
CN104	—	Connector wafer 6 P	L10153014061	1
CN301	960 0011 908	32 P flat cable	L30115132001	1
⚠ CP001	—	Connector wafer 2 P	L10803960201	1
JP001,002	—	Connector wafer 8 P	L10120080002	2
JP004	—	Cable holder 3 P	L11251052030	1
JP004	—	Flat cable 260 mm Black	L32026103260	1
JP101,102	—	Cable holder 5 P	L11251052050	2
JP101	—	Flat cable 200 mm Black	L32020105241	1
TP001	—	Connector wafer 2 P	L10153014021	1
TP003~006	—	Connector wafer 3 P	L10153014031	2
	—	Heat sink	for IC101~103	3
	960 0036 909	Terminal	379000012000	1
	960 0012 004	FLD support	407002002101	1
J201~247	—	Jumper wire	L40200002002	47
J401~431	—	Jumper wire	L40200002002	31
J501~506				6
W1	—	1P Connector wire Black L=100 mm	L00010122001 Asia model only	1
W2	—	1P Connector wire Yellow L=100 mm	L00010122401 Asia model only	1
W3	—	1P Connector wire Blue L=120 mm	L00010122601 Asia model only	1

CASSETTE DECK SECTION

WIRING DIAGRAM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2
3
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5
6
7
8
A
B
C
D
E
CN4
1
3
CN3
5
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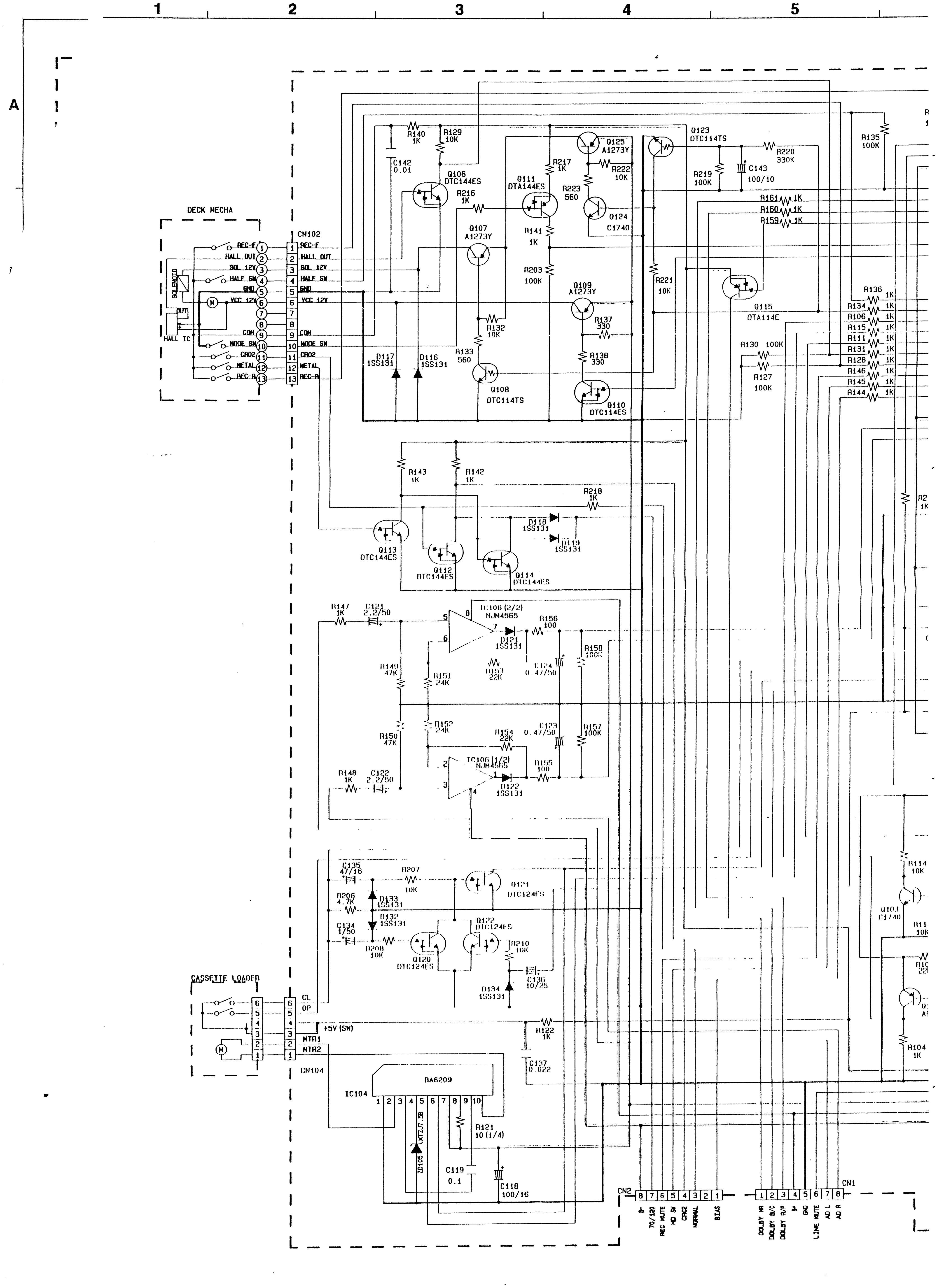
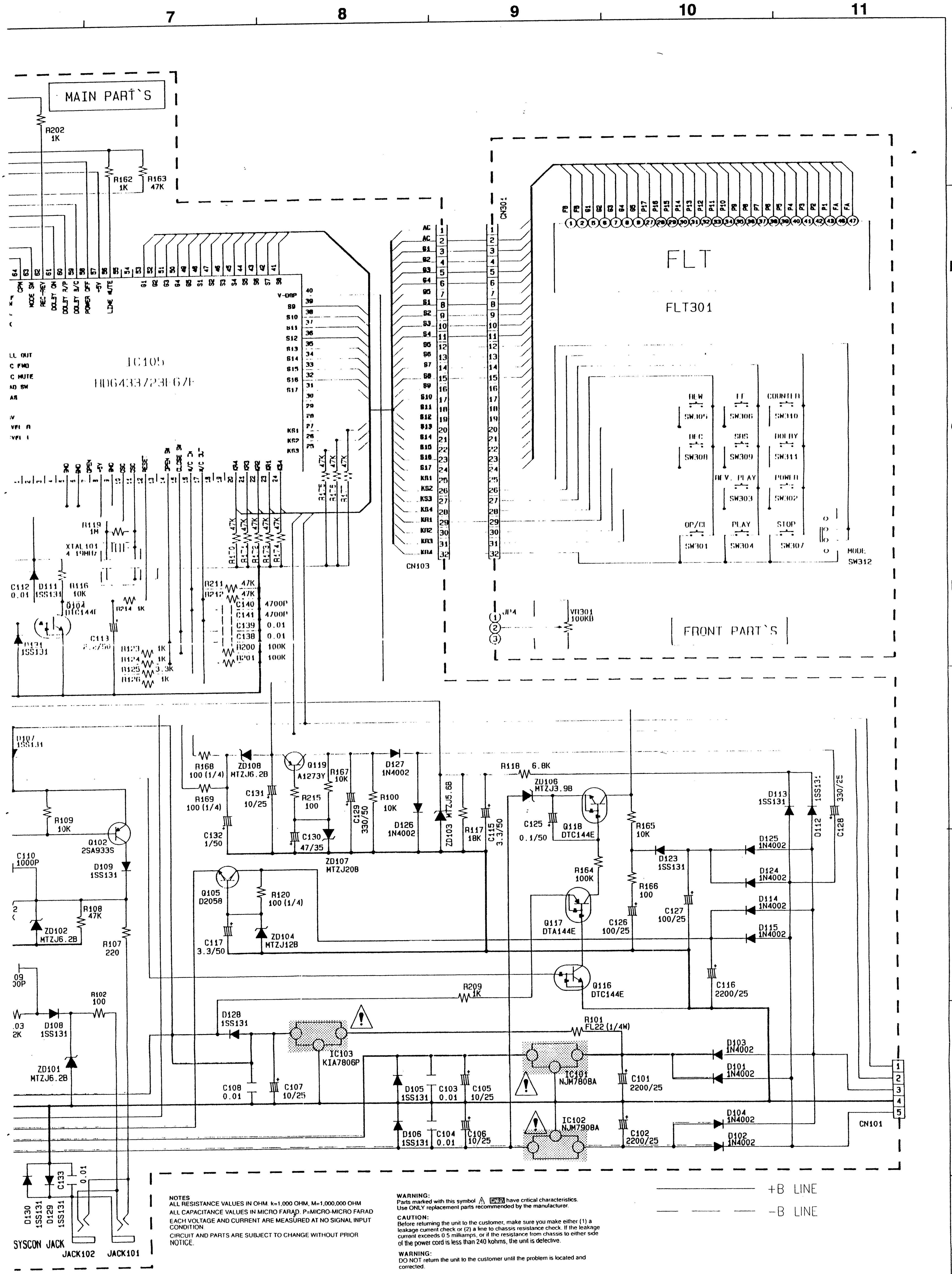
AUDIO UNIT
7028-02105-101
JP1
8
1
JP2
8
CN102
13
1
CN1
5
CN2
8
1
JP4
3
1
FRONT UNIT
7028-02105-201
AC CORD
CP1
JP101
5
MAIN UNIT
Europe & U.K model : 7028-02105-002
Asia model : 7028-02105-003
CN104
5
DECK MECHA UNIT
8158-00082-001
JP102
5
POWER UNIT
Europe & U.K model : 7028-02105-002
Asia model : 7028-02105-003
CN103
32
1
CN301
32
1

CAS
SCH

SCHEMATIC DIAGRAM (1/2)


1
2
3
4
5
A
DECK MECHA
REC-F
HALL OUT
SOL 12V
HALF SW
GND
VCC 12V
COM
MODE SW
CRO2
METAL
REC-R
SOLENOID
OUT
HALL IC
M
CN102
Q106 DTC144ES
Q107 A1273Y
Q108 DTC114TS
Q109 A1273Y
Q110 DTC114ES
Q111 DTA144ES
Q123 DTC114TS
Q124 C1740
Q125 A1273Y
Q115 DTA114E
R140 1K
R129 10K
C142 0.01
R216 1K
R217 1K
R222 10K
R223 560
R141 1K
R203 100K
R221 10K
R132 10K
R133 560
R137 330
R138 330
R220 330K
R219 100K
C143 100/10
R135 100K
R161 1K
R160 1K
R159 1K
D117 1SS131
D116 1SS131
R136 1K
R134 1K
R106 1K
R115 1K
R111 1K
R131 1K
R128 1K
R146 1K
R145 1K
R144 1K
R130 100K
R127 100K
R143 1K
R142 1K
R218 1K
D118 1SS131
D119 1SS131
Q113 DTC144ES
Q112 DTC144ES
Q114 DTC144ES
R147 1K
C121 2.2/50
IC106 (2/2) NJM4565
R156 100
D121 1SS131
R158 100K
R149 47K
R151 24K
R153 22K
C124 0.47/50
R152 24K
R150 47K
R154 22K
C123 0.47/50
R157 100K
IC106 (1/2) NJM4565
R155 100
D122 1SS131
R148 1K
C122 2.2/50
C135 47/16
R207 10K
Q121 DTC124ES
R206 4.7K
D133 1SS131
D132 1SS131
C134 1/50
Q122 DTC124ES
R208 10K
Q120 DTC124ES
R210 10K
C136 10/25
D134 1SS131
CASSETTE LOADER
CL
OP
+5V (SW)
MTR1
MTR2
CN104
R122 1K
C137 0.022
IC104
BA6209
ZD105 MTZJ7.5B
R121 10 (1/4)
C119 0.1
C118 100/16
CN2
B+
70/120
REC MUTE
HD SW
CRO2
NORMAL
BIAS
CN1
DOLBY NR
DOLBY B/C
DOLBY R/P
B+
GND
LINE MUTE
AD L
AD R
R114 10K
Q103 C1740
R104 1K
R2 1K


7
8
9
10
11
A
B
C
D
E
F
G
H
MAIN PART`S
FRONT PART`S
IC105
HD6433723F67F
FLT
FLT301
CN103
CN301
CN101
SW301 OP/CL
SW304 PLAY
SW307 STOP
SW305 REW
SW306 FF
SW310 COUNTER
SW308 REC
SW309 SRS
SW311 DOLBY
SW303 REV. PLAY
SW302 POWER
SW312 MODE
VR301 100KΩ
JP4
XTAL101 4.19MHz
IC103 KIA7806P
IC101 NJM7808A
IC102 NJM7908A
Q102 2SA933S
Q105 D2058
Q116 DTC144E
Q117 DTA144E
Q118 DTC144E
Q119 A1273Y
R101 FL22 (1/4W)
C101 2200/25
C102 2200/25
C116 2200/25
SYSCON JACK
JACK102
JACK101
+B LINE
-B LINE

NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

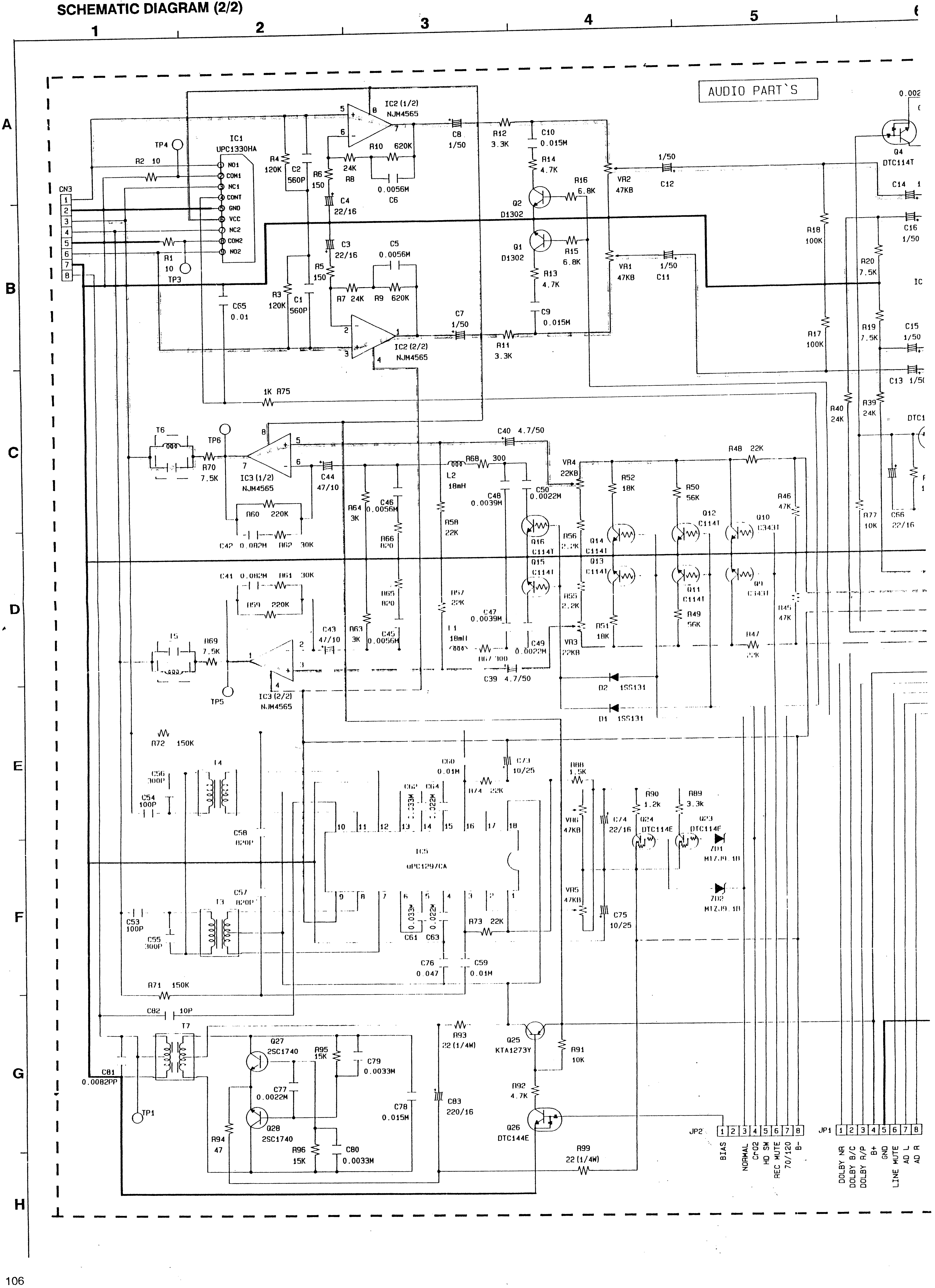
WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

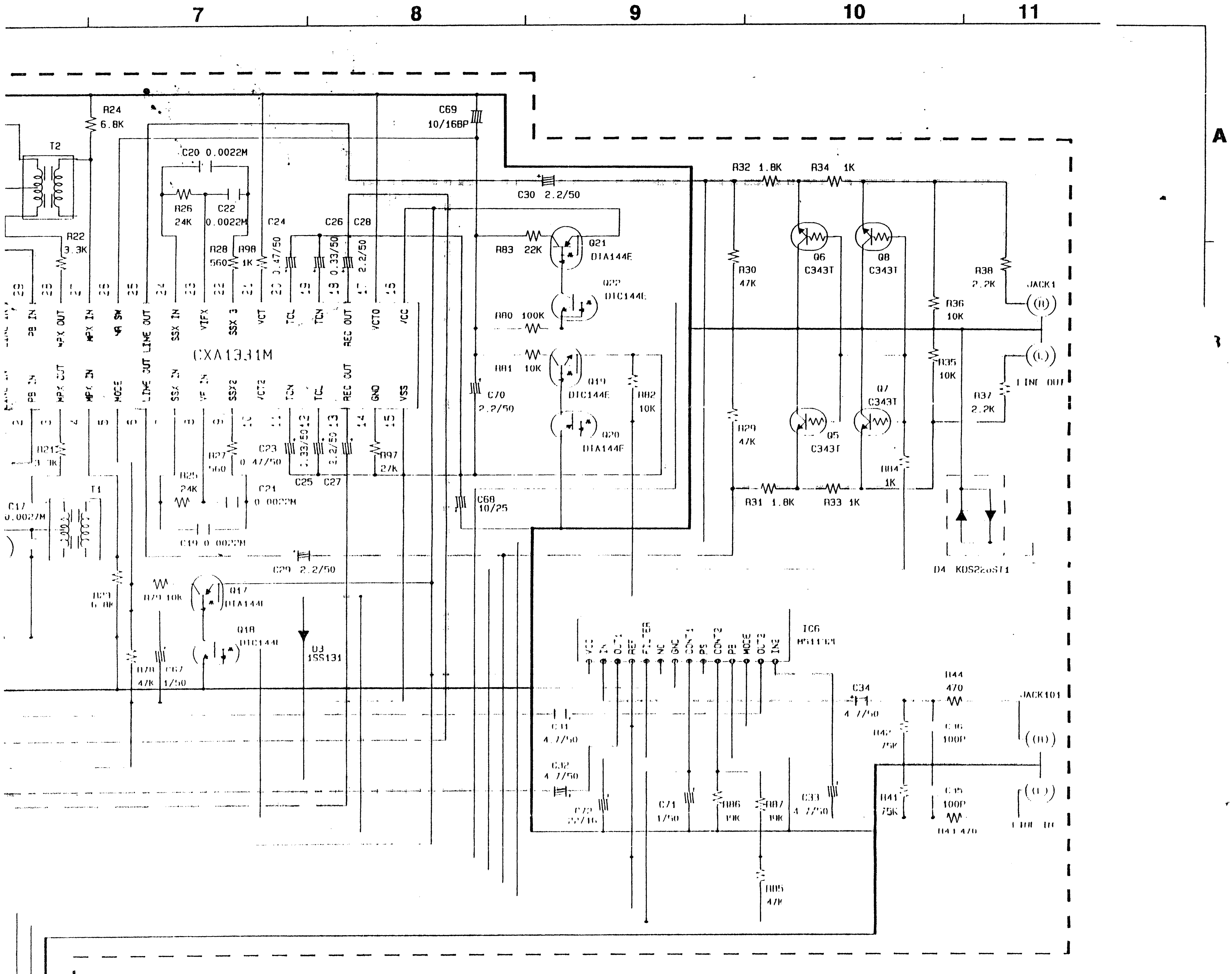
WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

CASSETTE DECK SECTION

SCHEMATIC DIAGRAM (2/2)


1
2
3
4
5
A
B
C
D
E
F
G
H
AUDIO PART'S
IC1
UPC1330HA
NO1
COM1
NC1
CONT
GND
VCC
NC2
COM2
NO2
CN3
TP4
R2 10
R1 10
TP3
C65 0.01
IC2 (1/2) NJM4565
IC2 (2/2) NJM4565
R4 120K
C2 560P
R6 150
C4 22/16
R10 620K
R8 24K
C6 0.0056M
C3 22/16
C5 0.0056M
R5 150
R3 120K
C1 560P
R7 24K
R9 620K
C8 1/50
C7 1/50
R12 3.3K
R11 3.3K
C10 0.015M
C9 0.015M
R14 4.7K
R13 4.7K
R16 6.8K
R15 6.8K
Q2 D1302
Q1 D1302
VR2 47KB
VR1 47KB
C12 1/50
C11 1/50
R18 100K
R17 100K
R20 7.5K
R19 7.5K
C14
C16 1/50
C15 1/50
C13 1/50
Q4 DTC114T
R40 24K
R39 24K
1K R75
T6
TP6
R70 7.5K
IC3 (1/2) NJM4565
C44 47/10
R60 220K
C42 0.082M
R62 30K
C40 4.7/50
L2 18mH
R68 300
C48 0.0039M
C50 0.0022M
R64 3K
C46 0.0056M
R66 820
R58 22K
VR4 22KB
R52 18K
R50 56K
R48 22K
R46 47K
R56 2.2K
Q16 C114T
Q15 C114T
Q14 C114T
Q13 C114T
Q12 C114T
Q11 C114T
Q10 C343T
Q9 C343T
R77 10K
C66 22/16
C41 0.082M
R61 30K
R59 220K
T5
R69 7.5K
TP5
IC3 (2/2) NJM4565
C43 47/10
R63 3K
C45 0.0056M
R65 820
R57 22K
C47 0.0039M
L1 18mH
R67 300
C49 0.0022M
C39 4.7/50
R55 2.2K
R51 18K
VR3 22KB
R49 56K
R47 22K
R45 47K
D2 1SS131
D1 1SS131
R72 150K
T4
C56 300P
C54 100P
C58 820P
C60 0.01M
C73 10/25
R74 22K
C62
C64
IC5
uPC1297CA
C57 820P
T3
C53 100P
C55 300P
C61
C63
R73 22K
C76 0.047
C59 0.01M
R88 1.5K
VR6 47KB
C74 22/16
R90 1.2K
R89 3.3K
Q24 DTC114E
Q23 DTC114E
ZD1 MTZJ9.1B
VR5 47KB
C75 10/25
ZD2 MTZJ9.1B
R71 150K
C82 10P
T7
C81 0.0082PP
TP1
Q27 2SC1740
R95 15K
C79 0.0033M
C77 0.0022M
Q28 2SC1740
R94 47
R96 15K
C80 0.0033M
C78 0.015M
R93 22 (1/4W)
C83 220/16
Q25 KTA1273Y
R91 10K
R92 4.7K
Q26 DTC144E
R99 22 (1/4W)
JP2
BIAS
NORMAL
CrO2
HD SW
REC MUTE
70/120
B-
JP1
DOLBY NR
DOLBY B/C
DOLBY R/P
B+
GND
LINE MUTE
AD L
AD R

DECK SECTION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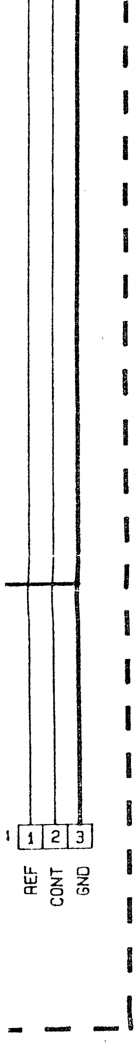
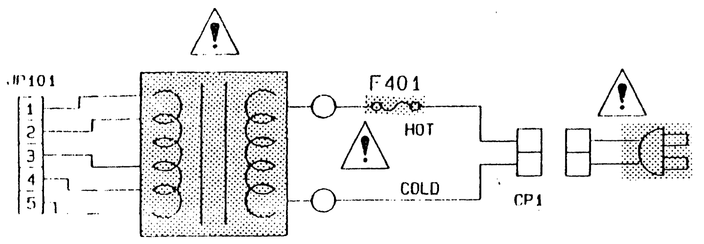
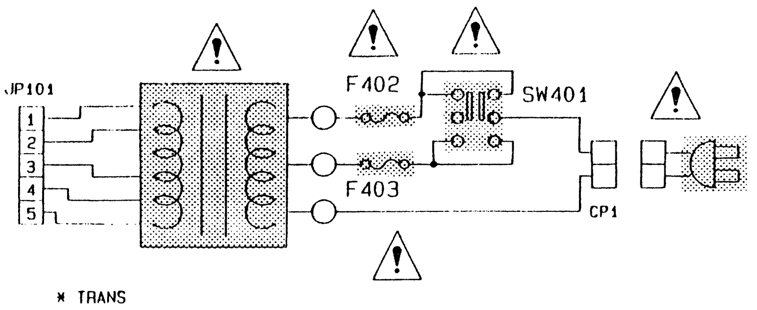
8
9
10
11
A
R24 6.8K
T2
C20 0.0022M
R26 24K
C22 0.0022M
R22 3.3K
R28 560
R98 1K
C24 0.47/50
C26 0.33/50
C28 2.2/50
C69 10/16BP
C30 2.2/50
R83 22K
Q21 DTA144E
Q22 DTC144E
R80 100K
R81 10K
Q19 DTC144E
Q20 DTA144E
R82 10K
C70 2.2/50
C68 10/25
CXA1331M
PB IN
MPX OUT
MPX IN
NR SW
LINE OUT
SSX IN
VIFX
SSX 3
VCT
TCL
TCN
REC OUT
VCTO
VCC
MODE
GND
VSS
R21 3.3K
T1
C17 0.0027M
R25 24K
R27 560
C23 0.47/50
C25
C27
R97 27K
C21 0.0022M
C19 0.0022M
C29 2.2/50
R79 10K
Q17 DTA144E
Q18 DTC144E
R78 47K
C67 1/50
D3 1SS131
R32 1.8K
R34 1K
R30 47K
Q6 C3437
Q8 C3437
R38 2.2K
JACK1
R36 10K
R35 10K
R37 2.2K
LINE OUT
R29 47K
Q5 C3437
Q7 C3437
R84 1K
R31 1.8K
R33 1K
D4 KDS226ST1
IC6 M51134P
VCC
IN
OUT
REF
FILTER
NC
GND
CONT1
PS
CONT2
PB
MODE
OUT2
IN2
C34 4.7/50
R44 470
JACK101
C11 4.7/50
C12 4.7/50
C72 22/16
C71 1/50
R86 10K
R87 10K
C33 4.7/50
R42 75K
C16 100P
C15 100P
R41 75K
R43 470
LINE IN
R85 47K


1
2
3
REF
CONT
GND

POWER PARTS


JP101
1
2
3
4
5
F401
HOT
COLD
CP1


JP101
1
2
3
4
5
F402
SW401
F403
CP1

* TRANS

J TYPE ———————— 100V 50, 60Hz

E2, EK TYPE ———————— 230V 50Hz

* FUSE F401

J TYPE ———————— 125V T800mA

E2, EK TYPE ———————— 250V T200mA

* TRANS

E1 TYPE ———————— 115, 230V / 50, 60Hz

* FUSE F402 F403

E1 TYPE ———————— 250V T200mA 250V T500mA

NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

———— +B LINE
— — — — -B LINE
- - - - Lch SIGNAL LINE
· · · · Rch SIGNAL LINE

WARNING:
Parts marked with this symbol ⚠ ▭ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

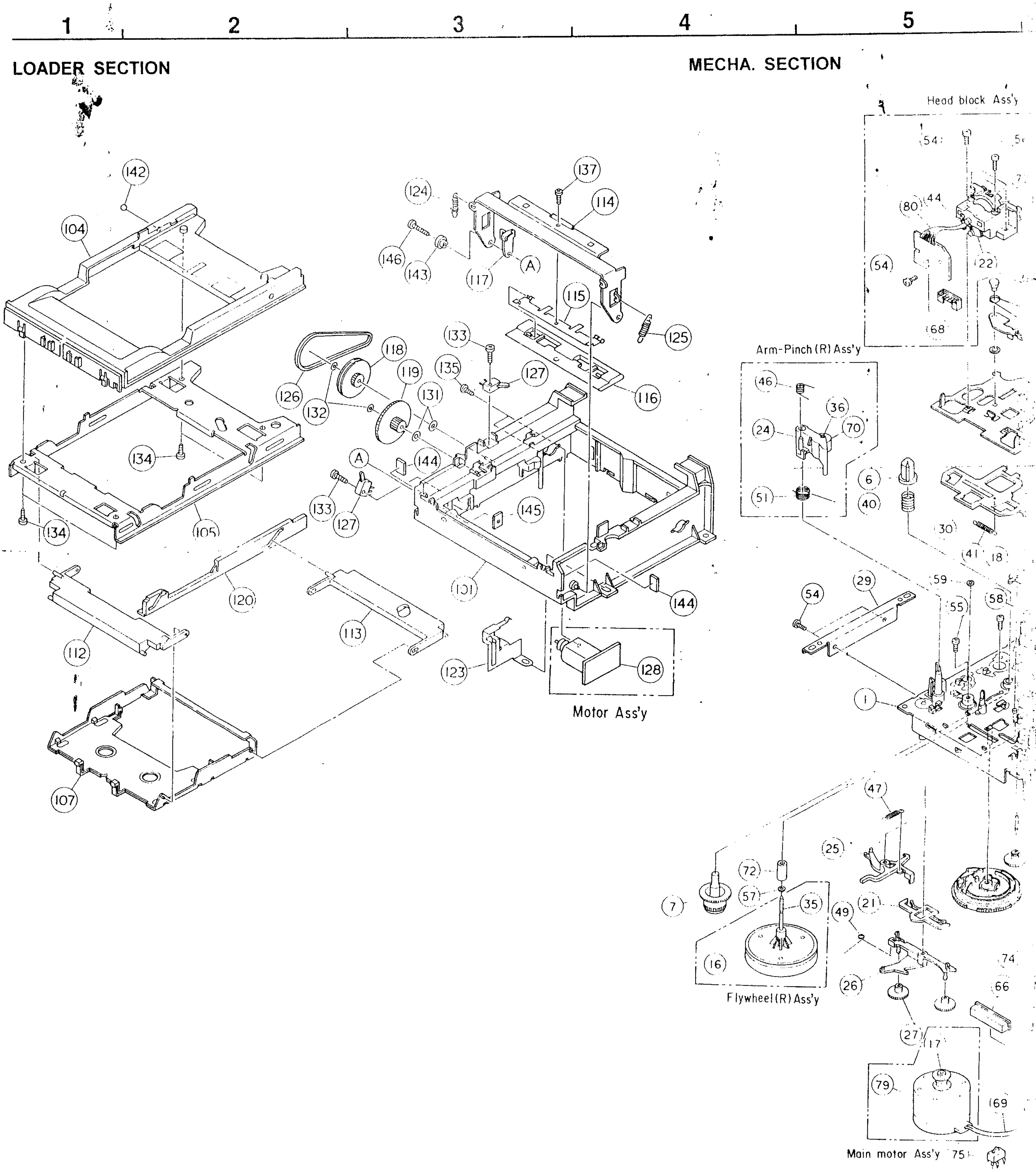
CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

PARTS I
CASSET

Ref. No.

CASSETTE MECHANISM EXPLODED VIEW

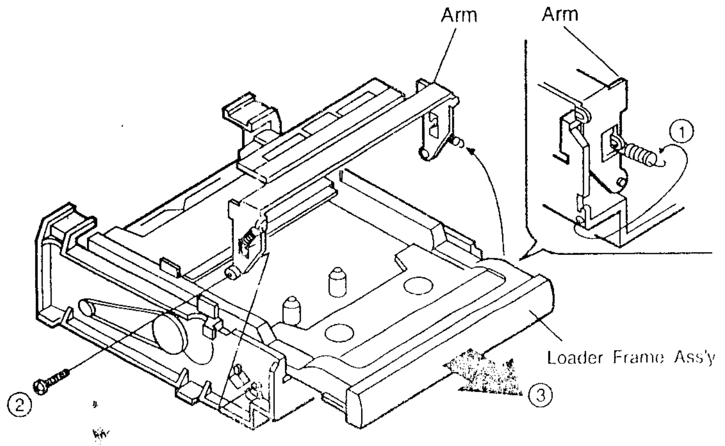

1
2
3
4
5
LOADER SECTION
MECHA. SECTION
142
104
134
105
134
112
107
120
113
126
118
132
119
131
135
133
127
A
144
133
127
124
146
143
117
A
137
114
115
125
116
101
145
144
123
128
Motor Ass'y
Head block Ass'y
54
80
44
22
54
68
Arm-Pinch (R) Ass'y
46
36
24
70
51
6
40
30
41
18
54
29
59
55
58
1
47
25
72
57
35
7
16
Flywheel (R) Ass'y
21
49
26
74
66
27
17
79
69
Main motor Ass'y
75

DISASSEMBLY PROCEDURES

(Assembly is performed in the reverse order.)

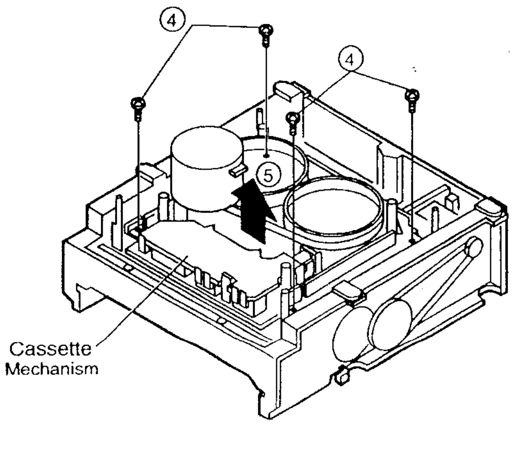
1. Loader Frame Ass'y

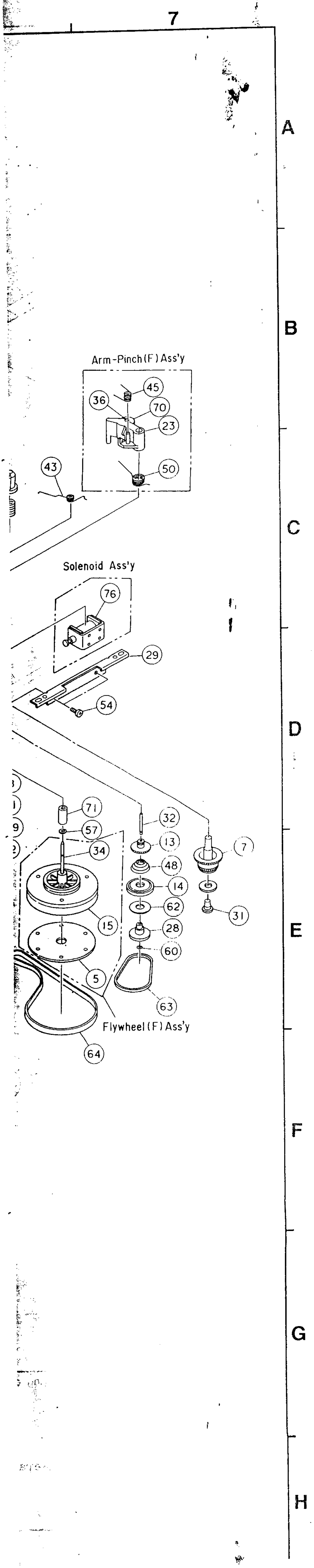
① Remove the Arm spring.
② Remove a screw fastening the Arm on the Loader Frame Ass'y.
③ Pull out the Loarder Frame Ass'y as shown in figure.


Arm
Arm
①
Loader Frame Ass'y
②
③

2. Cassette Mechanism

④ Remove 4 screws fixing the Cassette Mechanism.
⑤ Detach the Cassette Mechanism in the arrow direction.


④
④
⑤
Cassette Mechanism



PARTS LIST OF CASSETTE MECHANISM UNIT (Part No.:960 0014 701)

LOADER SECTION

Ref. No.	Part No.	Part Name	Remarks	Q'ty
101	960 0017 009	Frame Ass'y	A1A001A	1
102	—	—		
103	—	—		
104	960 0017 106	Tray	A1G002A	1
105	960 0017 203	Chassis	A1P001A	1
106	—	—		
107	960 0017 300	Holder Ass'y	A1A002A	1
108	—	—		
109	—	—		
110	—	—		
111	—	—		
112	960 0017 407	Arm A	A1G004A	1
113	960 0017 504	Arm C	A1G005A	1
114	960 0017 601	Arm	A1P003A	1
115	960 0017 708	Retainer	A1P004A	1
116	960 0017 805	Plate	A1G006A	1
117	960 0017 902	Arm	A1G007A	1
118	960 0018 008	Pulley	A1G008A	1
119	960 0018 105	Gear	A1G009A	1
120	960 0018 202	Gear rack	A1G010A	1
121	—	—		
122	—	—		
123	960 0018 309	Plate	A1P005A	1
124	960 0018 406	Spring A	A1S001A	1

Ref. No.	Part No.	Part Name	Remarks
125	960 0018 503	Spring B	A1S002B
126	960 0018 600	Belt	A1G011A
127	960 0018 707	Switch MSS-8B	S01W181
128	960 0018 804	Motor P.W.board Ass'y	M01T147
129	—	—	
130	—	—	
131	960 0018 901	Washer 2.1x4x0.5	P21W405
132	960 0018 914	Wasaher 2.1x4x0.5C	P21C405
133	960 0018 927	B tite screw 2x8 Black	N20B008
134	960 0018 930	B tite screw 2.6x5 Black	N26B005
135	960 0018 943	Screw 2x4	M20N004
136	—	—	
137	960 0018 956	Screw 1.4x2 Black	S14N002
138	—	—	
139	—	—	
140	—	—	
141	—	—	
142	960 0019 007	Steel ball f5	A1H006A
143	960 0019 104	Bush	A1H002A
144	960 0019 201	Buffer	A1G015A
145	960 0018 969	Nut	A1P007A
146	960 0018 972	Screw 1.7x10	S17N010
147			

PARTS LIST OF CASSETTE MECHANISM UNIT

MECH. SECTION

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	Main chassis	11112-00500BA	1
2	960 0020 106	Head base	11105-00310BA	1
3	960 0020 203	Sub. head base	11105-00420BA	1
4	960 0020 300	Spring plate	51299-12316XA	1
5	960 0020 407	Flywheel plate F	11143-00800BA	1
6	960 0020 504	Reel chip	11110-00120AA	2
7	960 0020 601	Reel base	11105-00330AA	2
8	960 0020 708	Bush P	11107-00220AA	1
9	960 0020 805	Head bracket	11106-00650AA	1
10	960 0020 902	Head gear	11128-00740AA	1
11	960 0021 008	Cam gear	11128-00760AA	1
12	960 0021 105	Idler gear	11128-00780AA	1
13	960 0021 202	Bush C	11107-00230AA	1
14	960 0021 309	Pulley C	11145-00560AA	1
15	960 0021 406	Flywheel pulley F	11145-00570AA	1
16	960 0021 503	Flywheel pulley R	11145-00580AA	1
17	960 0021 600	Motor pulley	11145-00590AA	1
18	960 0021 707	Arm P	11102-01020AA	1
19	960 0021 804	Gear P	11128-00730AA	1
20	960 0021 901	Cap P	11117-00090AA	1
21	960 0022 007	Brake lever	11102-01030AA	1
22	960 0022 104	DIR gear	11128-00750AA	1
23	960 0022 201	Pinch arm F	11102-01040AA	1
24	960 0022 308	Pinch arm R	11102-01050AA	1
25	960 0022 405	Cam lock arm	11102-01060AA	1
26	960 0022 502	RF arm	11102-01070AA	1
27	960 0022 609	RF gear	11128-00770AA	2
28	960 0022 706	Cap C	11117-00100AA	1
29	960 0022 803	Side bracket	11106-00970AA	2
30	960 0022 900	AC lever	11134-01870AA	1
31	960 0023 006	Magnet cap	11117-00120AA	1
32	960 0023 103	RF shaft	11150-02260EA	1
33	960 0023 200	Idler shaft	11150-02270EA	1
34	960 0023 307	Capstan shaft F	11150-02290EA	1
35	960 0023 404	Capstan shaft R	11150-02300EA	1
36	960 0023 501	Pinch shaft	11150-00130EA	2
37	—	—		
38	960 0023 705	Sub. shaft	11150-02810EA	1
39	960 0023 802	Roller P	11147-01780EA	1
40	960 0023 909	B/T spring	51203-03096XA	2
41	960 0023 912	AC lever spring	51211-01026XA	1
42	960 0023 925	Spring P	51203-05106XB	1
43	960 0023 938	Base head spring	51263-08046XA	1
44	960 0023 941	DIR spring	51267-03036XA	1
45	960 0023 954	Pinch spring F	51263-08056XA	1

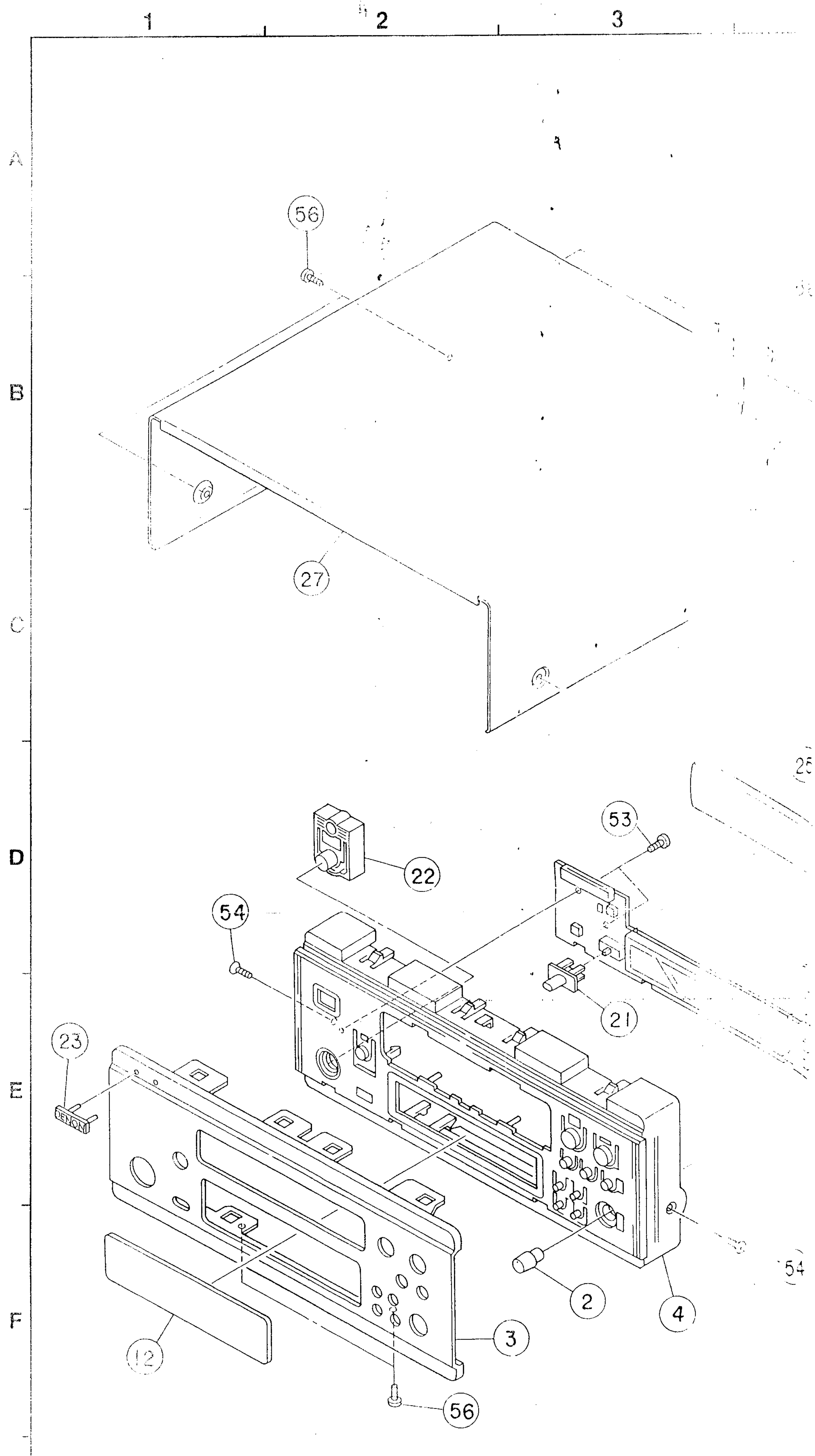
Ref. No.	Part No.	Part Name	Remarks
46	960 0023 967	Pinch spring R	51263-0805
47	960 0023 970	Cam lock spring	51211-0303
48	960 0023 983	Spring C	51203-0614
49	960 0023 996	RF arm spring	51264-0303
50	960 0024 005	Pinch return spring F	51263-030
51	960 0024 018	Pinch return spring R	51263-030
52	960 0024 021	Sub. spring	51272-1007
53	960 0024 102	Tapping screw 1.6x8	50032-160
54	960 0024 115	Tapping screw 2x4	50262-200
55	960 0024 128	Pan screw 2.6x5	50032-260
56	960 0024 131	Azimuth screw 2x5	
57	960 0024 209	Washer	51000-023
58	960 0024 212	Washer	51010-018
59	960 0024 225	Washer	51010-016
60	960 0024 238	Washer	51010-009
61	960 0024 306	Felt P	51000-023
62	960 0024 319	Felt C	51010-018
63	960 0024 403	Sub. belt	51428-034
64	960 0024 500	Main belt	51428-0690
65	960 0024 607	Control P.W.board	51000-023
66	960 0024 704	Rec./Playback connector	70219-300
67	—	—	
68	960 0024 720	Head connector	70219-300
69	960 0024 801	Motor wire	70620-016
70	960 0024 908	Pinch roller	11147-001
71	960 0025 004	Metal bearing A	51601-022
72	960 0025 017	Metal bearing B	51601-0201
73	960 0025 101	Hall IC	69801-990
74	960 0025 208	Detector switch	70016-040
75	960 0025 305	Mode switch	70066-020
76	960 0025 402	Solenoid	79840-000
77	960 0025 509	Rec./Playback head	71486-940
78	—	—	
79	960 0025 703	Motor	70620-016
80	—	Head wire	70620-0150
★ 81	—	Head wire	70620-0150
★ 82	—	Head wire	70620-01501
★ 83	—	Head wire	70620-01501
★ 84	—	Head wire	70620-01501
★ 85	—	Head wire	70620-0150
★ 86	—	Head wire	70620-01501
87			

CASSETTE DECK SECTION

PARTS LIST OF EXPLODED VIEW
CASSETTE DECK SECTION(UDR-F88)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	—	Main P.W.B.unit		1s
1-1	—	Main P.W.B.unit	702802105003 Asia model	(1)
1-1	—	Main P.W.B.unit	[illegible]	(1)
1-2	—	Audio P.W.B. unit	[illegible]	(1)
1-3	—	Front P.W.B. unit	[illegible]	(1)
1-4	—	Voltage sei P.W.B.unit	Asia model	(1)
2	960 0084 702	Balance knob	508702002102	1
3	960 0084 003	Front panel	306702090801	1
4	960 0084 100	Inner panel	321702016101	1
5	960 0012 402	Moter cover	431002019601	1
6	960 0003 505	Foot cushion	405002007501	4
7	960 0003 408	Front foot	400700006101	2
8	960 0012 305	Mecha supporter	407002001101	4
9	960 0003 204	Rear foot	400000060101	2
10	960 0003 301	Supporter P.W.B.	407000160101	3
11	960 0012 208	Chassis	320002009601	1
12	960 0084 605	Window	507702039002	1
⚠ 14	960 0032 301	AC Cord	L06100041001	1
⚠ 15	960 0003 602	Cord bush	438000018000	1
16	960 0084 414	Rear panel	320702008612 Asia model	1
16	960 0084 427	Rear panel	320702008610 Eueope and U.K.model	1
18	—	Heat sink sub	212000066000	2
⚠ 19	960 0036 307	Power trans	820057001004 Asia model	1
⚠ 19	960 0036 501	Power trans	820057001001 Eueope and U.K.model	1
21	960 0084 304	Select knob	508702006102	1
22	960 0084 207	Power button	508702004102	1
23	960 0079 209	DENON Badge	563000042801	1
24	960 0014 701	Cassette mechanism	815021640001	1
25	960 0084 508	Loader panel	431702045101	1
26	960 0014 604	Cassette mecha loader	803000009001	1
27	960 0006 308	Top cover	300002009601	1
28	960 0014 002	4P Pin jack	JACK001	1
29	960 0004 407	Mini jack φ3.5	JACK101,102	2
35	960 0037 403	Voltage selector	Asia model only	1
51	960 9000 156	Screw 3x17 Btipe ZNY/BH	B020030171B1	3
52	473 7508 033	Screw 3x14 CBTS(P)-B		4
53	960 9000 114	Screw 3x8 Btipe ZNY/BH	B020030081B1	10
54	960 9000 130	Screw 3x8 Btipe BK/FH	B020030083F1	2
55	960 9000 266	Tapping screw 3x6 ZNY/PH	B010530061P1	4
56	960 9000 208	Screw 3x8 Btipe BK/BH	B020030083B1 Asia model only	24
56	960 9000 208	Screw 3x8 Btipe BK/BH	B020030083B1 Eueope and U.K.model	22
57	960 9000 237	Screw 4x8 Ctipe ZNY/BH	B020940081B1	4

EXPLODED VIEW



G

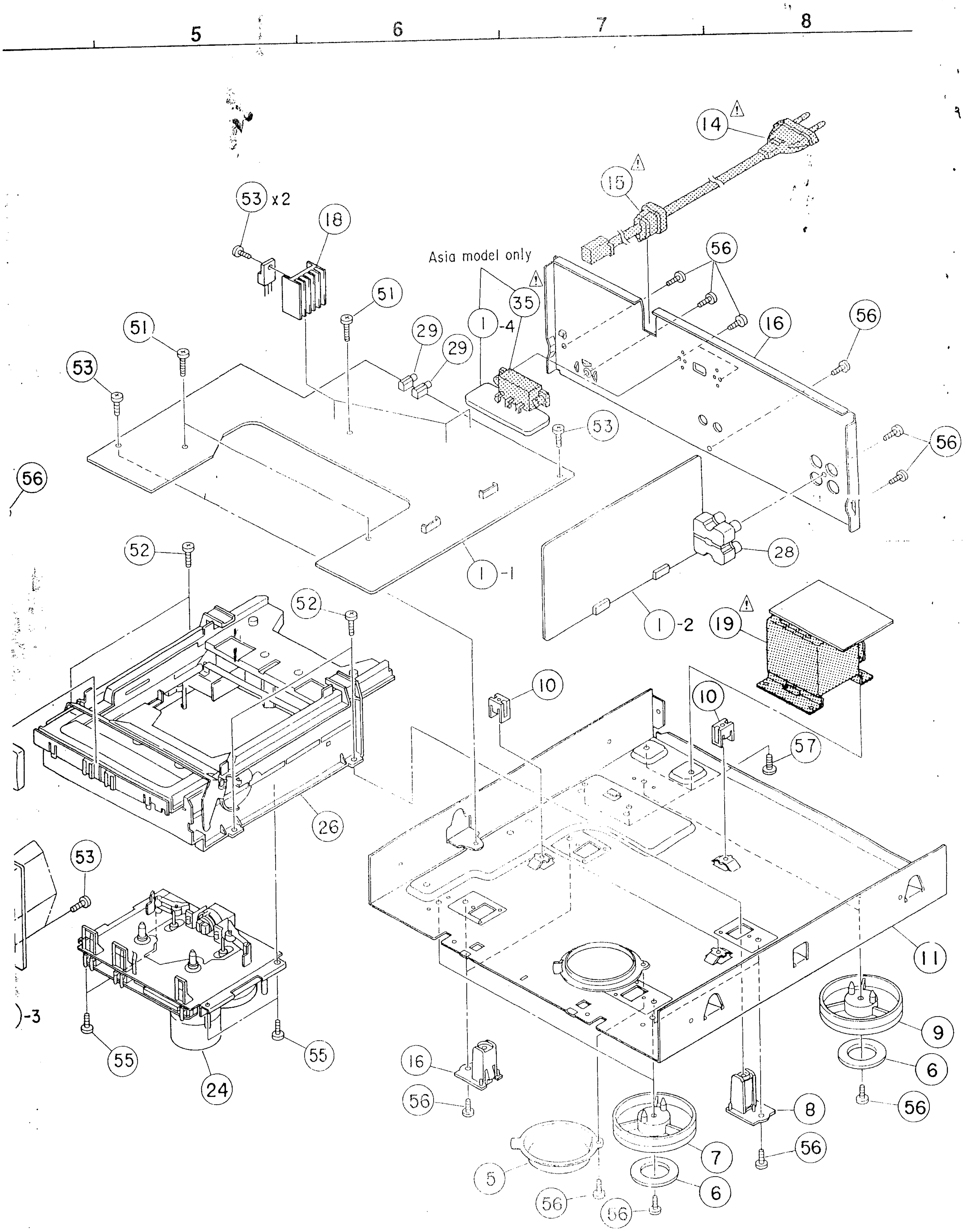
H

NOTE FOR PARTS LIST

- Part indicated with the mark "⊙" are not always in stock and possibly to take a long period of time to supplying, or some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diag

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.


5
6
7
8
14
15
53 x2
18
Asia model only
35
1 -4
29
29
51
51
53
56
16
56
53
56
56
28
1 -1
1 -2
19
52
52
10
10
57
26
53
11
9
6
)-3
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24
16
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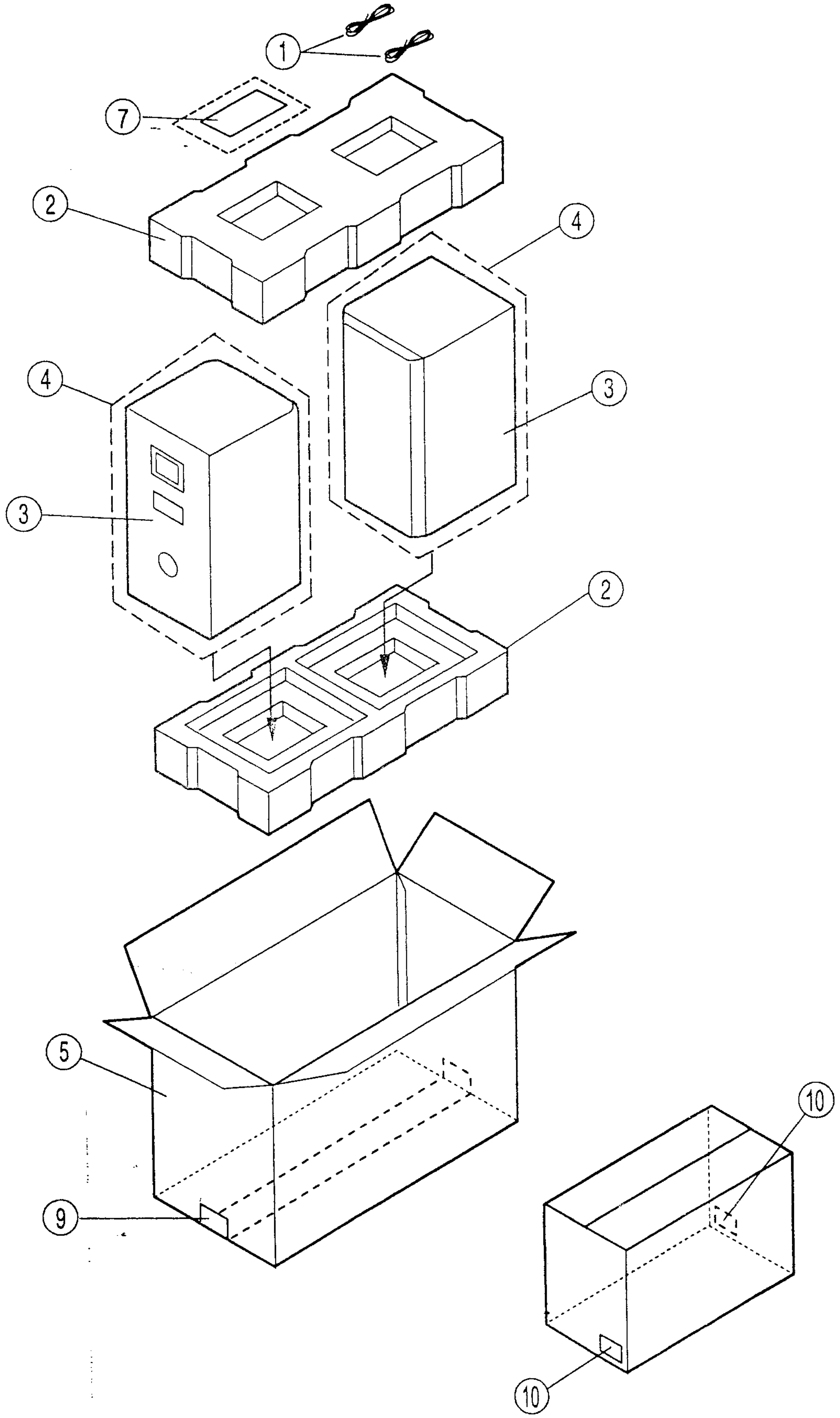
56
5
6
56
56

Remarks
1S002B
G011A
W181

PACKING VIEW

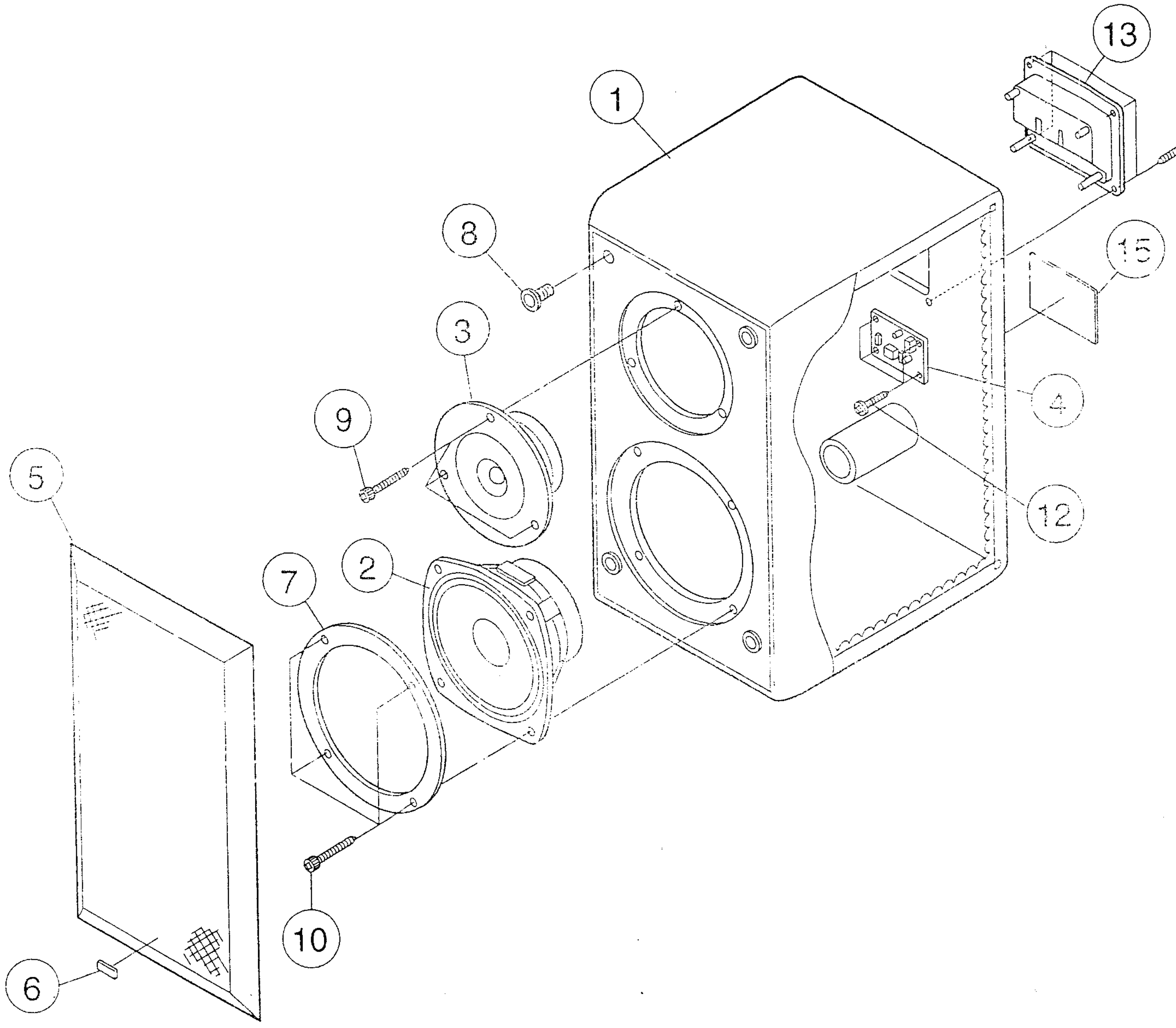


PARTS LIST OF PACKING & ACCESSORIES UNIT

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	960 0015 302	Speaker cable		2
2	960 0086 807	Cushion Ass'y		1
3	—	Speaker system unit (SC-F88)		1
4	960 0086 904	Poly bag	for set	2
5	960 0087 123	Carton case		1
7	960 0087 217	Operating instructions		1
9	—	OPP tape		1
10		Label control		2

SPEAKER SECTION

EXPLODED VIEW

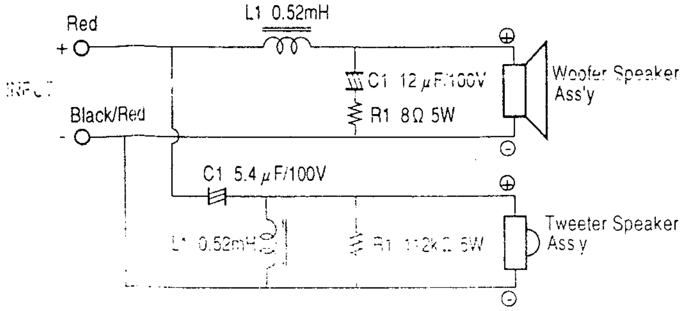


PARTS LIST OF EXPLODED VIEW

SPEAKER SYSTEM SECTION(SC-F88)

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	960 0086 001	Cabinet ass'y	S1226111601	2
2	960 0086 108	Speaker (woofer)	W0226003101	2
3	960 0086 205	Speaker (tweeter)	W0203006401	2
4	960 0086 302	Network	W0306020803	2
5	960 0086 409	Grille board ass'y	W0804009704	2
6	960 0086 506	DENON Badge	W0801013101	2
7	960 0086 603	Decoration ring	W0703000517	2
8	960 0016 408	Holder	W0709001301	8
9	960 9002 400	Screw 3.5x20	W0503001701	6
10	960 0016 301	Screw 4x20	W050800307	8
11	—	Port	W0309022201	2
12	960 9002 413	Screw 3.5x18	W0503000501	2
13	960 0016 709	Terminal	W0710001301	2
14	960 0016 327	Scrwe 3x15	W0503000207	8
15	960 0086 713	Serial No.sheet	W1103017506	2

SCHEMATIC DIAGRAM



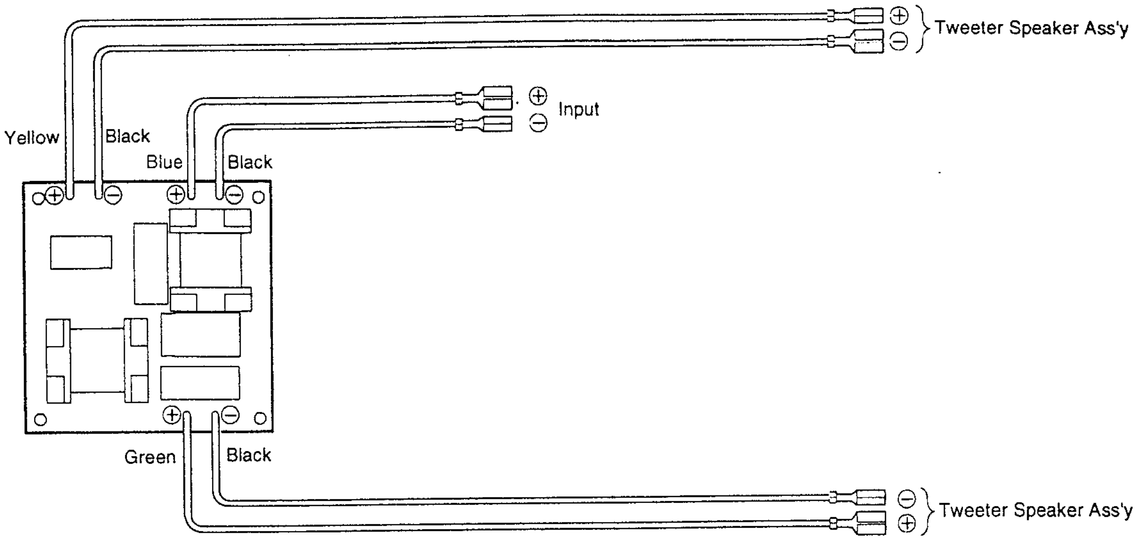
NOTE FOR PARTS LIST

- Part indicated with the mark "☉" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

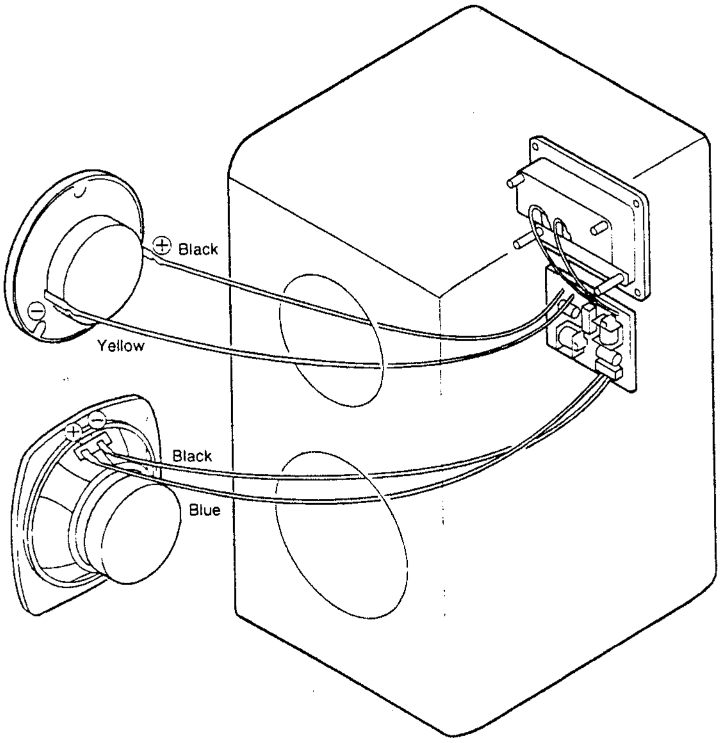
NETWORK


⊕
⊖
Tweeter Speaker Ass'y
⊕
⊖
Input
Yellow
Black
Blue
Black
Green
Black
⊖
⊕
Tweeter Speaker Ass'y

PARTS LIST OF NETWORK ASS'Y

Ref. No.	Part No.	Part Name	Remarks	Q'ty
	—	P.W.Board		2
L1	—	Choke coil 0.52mF		2
L2	—	Choke coil 0.39mF		2
R1	—	Cement resistor 8Ω 5W		2
R2	—	Cement resistor 112kΩ 5W		2
C1	—	Electrolytic 12μF/100V		2
C2	—	Electrolytic 5.4μF/100V		2

WIRE FORMING


⊕ Black
Yellow
Black
Blue